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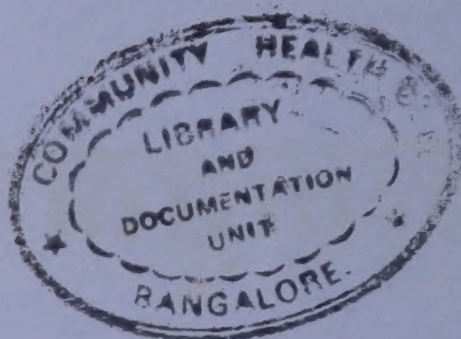
THE COMMONWEALTH FOUNDATION

OCCASIONAL PAPER
NUMBER XLI

THE DISABLED IN DEVELOPING COUNTRIES

Has good articles of Health Care Systems for Developing Countries -

PROCEEDINGS OF A SYMPOSIUM ON APPROPRIATE
TECHNOLOGY AND DELIVERY OF HEALTH AND WELFARE
SERVICES FOR THE DISABLED IN DEVELOPING COUNTRIES
HELD AT ORIEL COLLEGE, OXFORD, SEPTEMBER 26-30, 1976



Explanatory Note

THIS is the forty-first in a series of 'Occasional Papers' published under the imprint of the Commonwealth Foundation. The aim is to ensure that the experience gained by citizens of the Commonwealth, to whom the Trustees of the Foundation make grants, becomes freely and widely available to professional colleagues working in relevant fields throughout the Commonwealth.

The views expressed in this Paper do not necessarily reflect the opinions of Trustees, whether individually or collectively.

Further copies of this Report may be obtained on application to the Administration Officer, Commonwealth Foundation, Marlborough House, Pall Mall, London SW1Y 5HU, England.

MARLBOROUGH HOUSE

May 1977

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TERMS OF REFERENCE AGREED MEMORANDUM ON THE COMMONWEALTH FOUNDATION

(As published following the Commonwealth Prime Ministers' Meeting of July 1965)

A Commonwealth Foundation will be established to administer a fund for increasing interchanges between Commonwealth organizations in professional fields throughout the Commonwealth. It will be the purpose of the Foundation to provide assistance where it is needed in order to foster such interchanges.

The Foundation will be an autonomous body, although it will develop and maintain a close liaison with the Commonwealth Secretariat. Like the Secretariat, the Foundation will be accommodated at Marlborough House.

Within the broad purpose indicated above, the Foundation will include among its aims the following objects:

- (a) To encourage and support fuller representation at conferences of professional bodies within the Commonwealth.
- (b) To assist professional bodies within the Commonwealth to hold more conferences between themselves.
- (c) To facilitate the exchange of visits among professional people, especially the younger element.
- (d) To stimulate and increase the flow of professional information exchanged between the organizations concerned.
- (e) On request to assist with the setting up of national institutions or associations in countries where these do not at present exist.
- (f) To promote the growth of Commonwealth-wide associations or regional Commonwealth associations in order to reduce the present centralization in Britain.
- (g) To consider exceptional requests for help from associations and individuals whose activities lie outside the strict professional field but fall within the general ambit of the Foundation's operations as outlined above.

The Foundation could usefully develop informal contacts with the Commonwealth Parliamentary Association. To avoid the risk of duplication with the activities of existing organizations concerned with cultural activities and the Press, the Foundation should not initially seek to assume any functions in these fields.

The policy of the Foundation will be directed by a Chairman, who will be a distinguished private citizen of a Commonwealth country appointed with the approval of all member Governments, and a Board of Trustees who should be expected to meet at least once a year. The Board of Trustees will consist of independent persons, each subscribing to the Foundation, each Government having the right to nominate one member of the Board. These nominees, even if officials, will be appointed in a personal capacity. The Commonwealth Secretariat will be represented on the Board of Trustees by the Secretary-General or an officer appointed by him.

There will be a full-time, salaried Director who will be appointed, initially for a period of not more than two years, by Commonwealth Heads of Government collectively acting through their representatives in London. He will be responsible to the Board of Trustees.

The Director will require a small personal staff: general office services will be provided by the Commonwealth Secretariat.

It is hoped that Commonwealth Governments will subscribe to the cost of the Foundation on an agreed scale. Payment of the first annual subscriptions will be made as soon as the Director has indicated that a bank account for the Foundation has been opened. It is hoped that, in addition, private sources may be willing to contribute to the funds of the Foundation.

The accounts of the Foundation will be audited annually by the British Comptroller and Auditor-General, whose report will be submitted to the Board of Trustees. The financial year of the Foundation will be from July 1st to June 30th.

The budget of the Foundation will be subject to the approval of the Board of Trustees.

The British Government will draw up the necessary documents to set up the Trust and take any further steps needed to constitute the Foundation as a legal charity.

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INTRODUCTION

The National Fund for Research into Crippling Diseases has had a continuing interest in the problems of disability in the Third World. Over the years grants have been approved for projects in Uganda, Nigeria, Lesotho, the West Indies, and India, and conferences on Rehabilitation in Africa have been held in Kampala, Addis Ababa and Lusaka. In 1973, with support from the Commonwealth Foundation, the National Fund mounted an international symposium on orthopaedic training in developing countries which was attended by delegates from seventeen countries. In 1976, again with generous assistance from the Commonwealth Foundation and with the support of the Ministry of Overseas Development, the National Fund arranged a symposium at which less sophisticated technology being applied for the benefit of the disabled in many developing countries was presented or reported on for consideration by others working in similar fields.

This symposium was held at Oriel College, Oxford, in September 1976, and the present volume constitutes the proceedings. That the meeting was successful is beyond doubt. Letters received from the participants after they had dispersed went far beyond the normal courtesies and made the value of the meeting extremely clear.

Besides the bodies already mentioned thanks must be recorded to the chairmen of the symposium, Mr Donald V. Wilson and Mr Lewis Carter Jones, M.P., to the delegates several of whom came long distances to share their experiences, to Mr John St John, the conference manager, and to Miss E. M. Gwyer on whose excellent reporting these proceedings are based.

Amberley, West Sussex
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OPENING OF THE SEMINAR

Chairman: Mr L. Carter Jones, M.P., Chairman of the Committee for Research into Apparatus for the Disabled.

After the Chairman had opened the meeting, MR DUNCAN GUTHRIE, Director of the National Fund for Research into Crippling Diseases which had organized the Symposium, welcomed the forty participants from sixteen different countries. He welcomed also the presence of representatives from the Department of Health and Social Security of the United Kingdom, the Department of Health, Education and Welfare of the United States and five governmental and non-governmental international organizations (International Labour Organization, Rehabilitation International, Pan American Health Organization, World Rehabilitation Fund and Oxfam).

The success of the Symposium, MR GUTHRIE said, would depend on what those present contributed to it and he appealed to them not to content themselves with discussion but to make positive proposals for action. He stressed the use in the title of the word 'appropriate'. There were many kinds of technology and the appropriate technology in any given case was what was right for the individual concerned in his particular circumstances. It did not mean low-level, or intermediate or second-best technology; but simply the one that was right. There were cases in which the 'right' technology was the most sophisticated one; others in which the simplest technology was the appropriate one to apply. Dr Schumacher had called it 'technology with a human face'. MR GUTHRIE ended by expressing the hope that this would prove a friendly, informal and fruitful meeting.

THE CHAIRMAN agreed that appropriate technology could take the simplest forms. He also referred to the current controversy in his own country about the provision of three-wheeled cars for the disabled: were they so dangerous that they should be abolished or were the possible dangers counterbalanced by their value to those who used them? What was the appropriate technology in this case? One of the objects of the Symposium should be to spread knowledge of what had been found to be appropriate technologies in various given countries.

COMMENTS ON SOME FACETS OF FUNCTIONAL RESTORATION IN THE FAR EAST

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The title originally submitted: 'Functional Restoration in the Far East' was, perhaps, to some extent misleading. The Far East is no more a political, economic or cultural entity than is the West. My own first hand experience has been limited to a number of countries in the Far East which are not under Communist rule. My knowledge of rehabilitation in the Communist countries of the East is, therefore, for what it may be worth, only second hand knowledge; I would not presume to talk about it here except perhaps by a passing reference or two.

The countries of the Far East within the Western sphere of economic and political influence coexist in various stages of industrial development. They range from the highly industrialized Japan to countries like South Korea which are in an intermediate phase of industrialization. Since my own experience is centred mainly in these two areas, I will draw largely on the types of societies represented by these examples. (I am avoiding, as you may have noticed, the term 'underdeveloped' because in the field of rehabilitation, as well as in the health services industry delivery system generally, a significant cultural lag remains.)

In contradistinction to the cultural 'melting pot' in the United States and in parts of Europe, the cultural climate in the Far East is considerably more homogeneous. During my many years of clinical practice in the Greater New York City area, I have encountered, even within this one city and its suburbs, situations in hospitals, clinics, nursing homes, and in private practice which in many ways are reminiscent of other times and other cultures. The Williamsburg area in Brooklyn; the poverty stricken areas of Brownsville, Bedford Stuyvesant, and the East Bronx present a picture different perhaps from what one might expect in the commercial capital of one of the most highly industrialized nations in the world. I have always kept this in my mind in my travels and have tried to avoid the pitfall of drawing general conclusions from isolated local situations.

I have chosen 'functional restoration' as the subject-matter of this presentation because, in my opinion, functional restoration of the individual within the framework of a given society really represents the end result of the entire rehabilitation process. Now this is so, regardless of the relative level of skill and education, of rehabilitation technology and of rehabilitation professionals and technicians. It also is perhaps too broad a term to use because what I had in mind was essentially restoration of physical function although it is not really possible to ignore coexisting and correlated socio-economic and psycho-social problems.

And, finally, I am using the concept of functional restoration as a synthesis between two points of view based on the social and political nature of the societies espousing them: one which would consider the maximum amount of self-fulfilment of the individual in his attempt to live a full life and to control his environment; and the other which sees the primary goal of functional restoration primarily as restoring the productive value of the individual to his society. Both these concepts of functional restoration are, in my opinion, quite compatible when used in their proper context.

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The next distinction I would like to make is between the coexisting socio-economic systems which can be found in both developing and developed societies in the areas of the world under discussion as well as in the older European countries. Essentially this is the rural agricultural society on the one hand and the highly industrialized and mechanized urban culture developing on the other because of the continuing industrialization and automation of agriculture.

This distinction tends to become smaller and smaller as time goes on. This distinction is definitely diminished in today's Japan compared to today's South Korea. The distinction continues to exist, if to a diminishing degree, in the actual mode of living, but remains prominent with regard to cultural backlog factors.

And, lastly, there is one other distinction which I would like to consider as background material. That is the goal setting process in rehabilitation. Frequently the goals set by therapists and other members of the therapeutic community for the patient are not at all the goals patients set for themselves. It has always been my experience that rehabilitation or functional restoration is generally successful where the therapist is trying to achieve the patient's goal. On the other hand, it has been generally unsuccessful where the handicapped individual's goal and the therapist's goal do not coincide.

Historically speaking, the first problem of functional restoration has always been survival. In ancient Japan as well as in ancient Rome, infanticide was an established factor in cases of malformation, whether cosmetically or functionally, of the new born infant or perhaps where the sex of the infant proved inconvenient. In modern society, however, a great deal of social effort is lavished on disabled children. In countries such as the United States, rehabilitation is still largely a function of the private sector, and charitable donations for the welfare and rehabilitation of children are usually easier to obtain than for almost any other group. In all countries it may be true that parents of disabled children exert considerable pressure on both the private and the public sectors, demanding the best possible rehabilitation procedures for the children whose entire future is still ahead of them. However, since I would like to discuss primarily functional restoration, rather than rehabilitation procedures, it would lead me too far afield to go at great length into problems of special education, sensory and perceptual dysfunction, and concomitant problems of emotional and psychological adjustment.

The functional restoration of that part of the population which might be considered in the productive age group takes on special significance because this is the population sector which, if successfully rehabilitated, tends to contribute to the welfare of society as a whole, rather than become a drain on society. Here we deal with a family breadwinner, or a parent raising a family, or perhaps a family taking care of aged parents.

In the past, it was the responsibility of each family to take care of their non-productive members, in our case, the handicapped and disabled. This concept is still very much alive in people's minds, particularly in rural areas. However, advanced communication facilities such as newspapers, radios, television, and the advancing automation of agriculture tend to bring countryside and city ever closer organizationally, economically, and culturally. People now know about different lifestyles, about the practice of medicine, and about advances in rehabilitation methodology and technology

elsewhere. It has become increasingly apparent in the last decade or so that rehabilitation theories and techniques have tended to become relatively standardized. I find it interesting to note that in the two Asian countries where I have spent most of my time – Japan and South Korea – American concepts of rehabilitation procedures seem to be predominant. This phenomenon may be explained, first, because the concept of organized rehabilitation procedures, which developed more or less during World War II in the United States Army, was designed to return fighting men to the frontlines. Secondly, because both these countries have at one time or another in their recent history been the subject of U.S. military rule and occupation. Thirdly, and this may in the long run be the most significant factor, the methods developed by the military are uniquely applicable to restore to a more productive life the disabled individual in factory or office, i.e., to return them to the assembly line.

The very special role played by the Institute for Rehabilitation Medicine under the leadership of Dr Howard Rusk should not go without mention here, but since Mr Taylor is a member of this panel, I'll defer to him.

The third age group to be considered is comprised of individuals in their post-productive years, or the recipients of geriatric rehabilitation. Here, the primary goal is not to return the individual to the assembly line but rather to make the individual independent in areas of self care and mobility so that he may live a useful life using all his residual capacities without becoming a burden to either his family or to society. Let us remember that not so long ago, again originating in the rural agricultural communities, the family always took care of its own. As the population shifts to big cities, as a result of industrialization, society must increasingly assume responsibility for the welfare of the individual because there is simply no room for the severely disabled in small, cramped living quarters. Then too, the responsibility of children for their parents is not as clearly defined as the responsibility of parents for their children.

As the countries of the Far East develop along Western lines economically and as they, too, become heirs to the concomitant cultural and social problems, they still retain more of the customs and values which derive from their own past history.

Let us now consider one key facet of functional ability: mobility – the ability of the handicapped individual to move from place to place, from home to work, from work to home and within the home. In very broad terms, the disabled individual may suffer from a deficient range of joint motion, muscle strength, etc., and may have to resort to the use of artificial limbs, braces, wheelchairs, and various other ambulation aids.

Of course the use of artificial limbs is not new. The general principles of fabricating and fitting lower extremity prosthetic and orthotic appliances are almost universally known and standardized. However, local fabrication methods depend on the level of industrial development in the country involved. They are quite different in Japan today where the standards attained are comparable in most respects to those in the United States and Europe. Production methods in South Korea, on the other hand, are not nearly as sophisticated and, while imported devices are available to the well-to-do, they are not available to the general public. A further distinction also exists in the different health delivery systems of various countries. In the United States, the professional limb maker (or prosthetist) and the professional brace maker (or orthotist) supplies the user with artificial limbs or braces on the prescription of the orthopaedic surgeon, or the physiatrist; responsibility for supervision and training of the user usually rests with the physiotherapist.

In Japan, where National Health Insurance prevails and private practice of medicine and associated medical services are virtually non-existent, limbs are usually fabricated by technical personnel in the hospital or institution. They use some prefabricated parts which may be imported or domestic in origin while other parts are fabricated on the premises. This method of delivery has certain advantages from the point of view of availability. The inherent disadvantage here results from a lack of standardization on a national scale which is based on the vertical structure of Japanese society. Specifically, this means that communication flows essentially from top to bottom in each medical facility or university, with minimal communication horizontally, between different schools and medical facilities.

In South Korea, with the exception of a few showplaces here and there, fabrication is in a relatively primitive stage. This is mainly because of restrictive factors inherent in the necessity for using domestic raw materials and local crafts. We must also consider that while Japan is an affluent country, South Korea is not. As a result, I have noted that fabrication of artificial limbs in Korea is entirely dependent on domestic wood and handcrafted metal parts, while the advanced metal and plastics industry in Japan is providing many more prefabricated parts.

In the area of lower extremity bracing, similar differences exist between the industrially more advanced Japan and the industrially still developing Korea. In Japan, brace parts are usually prefabricated or, if made on the premises, which is frequently the case, are fabricated with up-to-date, modern machinery by trained technicians. Production of brace parts in South Korea is still on a more primitive level, although the end result is quite acceptable. I had occasion to observe the fabrication of brace parts in Seoul and was quite surprised to note a skilled blacksmith take a piece of metal, heat it over an open fire with a foot operated bellows, and then use a heavy hammer on the hot iron to create each part separately. But please note that even here the parts used are made as closely as possible to American textbook specifications. There seems to be no basic functional difference with regard to canes, crutches, and walking aids of various kinds, but quality, appearance, and materials used vary widely.

Wheelchairs differ from American and European ones since they are constructed with a double H-Brace, a very rigid type of construction compared to the Western 'flexible' concept. The disadvantage of the rigid construction is that it tends to reduce the life span of these wheelchairs, because the greatest torque is applied to the axle of the large wheels resulting in excessive wear and tear. The life span of the average Oriental wheelchair is from one to three years compared to the Western chairs' five to seven years. But economics aside, the real problem in the use of wheelchairs, braces and artificial limbs is not in their fabrication, appearance, or sophistication but rather in the way in which they can or cannot be used.

When one enters an Eastern style abode, shoes are exchanged for slippers; a high (30 to 40 cm) step or stoop has to be ascended and, in the living room area, slippers are removed and one sits on tatami mats and cushions on the floor. Men usually sit with legs crossed and knees close to the ground; women sit on their heels with ankles in maximum plantar flexion and knees in maximum flexion. Toilets are on floor level and require a squatting position. This style of living, of course, is totally unsuited to the use of wheelchairs, braces, crutches, or even shoes. Rehabilitation units, therefore, have to provide training in activities of daily living for Western as well as Eastern styles of living.

Further, the Japanese traditionally bathe before dinner. To bathe, one squats on a low (10 cm)

stool, soaps, and thoroughly rinses oneself. Then one submerges in the tub. Tubs are higher and shorter than ours so knees and hips remain in flexion and water covers the shoulders. For the physically handicapped, bathtub transfer and use present functional problems different from those in the West.

In most institutions, ample space is provided for rehabilitation services. Most of this space is usually allocated to physiotherapy, research (if any), and occupational therapy, in that order. One-half of all rehabilitation space is customarily allocated to hydrotherapy (as is one-half of the equipment budget). Speech therapy is virtually non-existent; social service is at a relatively underdeveloped level.

Rehabilitation procedures are practically never carried on in the patient's home; therefore, equipment which normally would be used for the patient to continue his rehabilitation at home is not really needed. The system in Japan keeps patients in the institution until they are fully rehabilitated. Whenever the rehabilitation process will take a considerable length of time, the patient is usually transferred to a specialized rehabilitation centre where the family moves in with the patient and helps with his rehabilitation until he is ready to go home as a fully functioning member of the family.

This system, so radically different from our concept of getting the patient out of the hospital and home as soon as possible, becomes logical only when two factors are considered. First, the average Japanese home is totally unsuited to rehabilitation of patients needing such aids as wheelchairs, braces, and crutches because of the tatami mats. Also, in the normal Japanese household, the whole family lives, sleeps, and eats in one room. The presence of a disabled person under these crowded conditions can become difficult to manage. The bathroom presents problems because of the difficulty disabled patients have in squatting over a toilet instead of sitting on a toilet seat. Also, sitting at a table to eat is difficult because one must sit on the floor with legs crossed.

Second, the cost, mostly covered by National Health Insurance, of a patient's stay in the hospital is vastly less than the cost needed to provide the services and perhaps to reconstruct the home and bathroom.

In Japan, but not always in Korea, factory buildings and office facilities are Western style and as a rule accessible to users of wheelchairs, prostheses, braces, crutches and canes. There seems to be a great awareness, specifically in Japan, of the problem of wheelchair access to public facilities. For instance, on each of the famous Shinkansen – Bullet express trains travelling between Tokyo and Hakata at a speed of 120 miles per hour, a wheelchair compartment can be found. Wheelchair access signs are visible on most public buildings as well as on many taxicabs. Ramps are common in hospitals and on various street crossings and ridged sidewalks are beginning to appear at street crossings in the city to facilitate mobility of the blind. Sometimes, this leads to, shall we say, exaggerations. I recall seeing a newly built nine-storey hospital with a ramp, usable for wheelchairs, going all the way up to the roof on the outside of the building. Some of the teenage paraplegics institutionalized there were using it to race down this ramp at break-neck speed. In one small town on the island of Kyushu, in the south of Japan, I found parallel to each pedestrian walk a wheelchair path and a bicycle path. I was able to confirm that the local manufacturer and distributor of bicycles and wheelchairs held a position of political importance and had been responsible for legislation making this type of street layout mandatory.

In Japan the development of motorized wheelchairs has been given a considerable amount of

attention, even more so than in the West. Generally, electric or motorized wheelchairs share several disadvantages. Primarily, they do not usually let the occupant cross a street. Mainly because of the weight factor, the patients using electric wheelchairs are usually unable to negotiate curbs and, therefore, are unable to cross streets unaided. However, these problems now appear to have been solved: near the city of Beppu, on Japan's Kyushu Island, I visited what is certainly the most modern up-to-date rehabilitation centre and sheltered workshop facility in the Far East. Sun Industries, under the guidance of Dr Nakamura, combines all the best features of rehabilitation medicine, physiotherapy, occupational therapy, etc., with an extensive research programme. This is focused on functional aids and environmental controls with an extensive workshop programme in conjunction with large and reputable commercial manufacturers, notably Sony Industries.

One of the devices developed at Sun Industries with considerable R and D input by Sony Industries, is a motor driven wheelchair. Operating on a 24-volt electric system and powered directly by two motors, controlled by a microswitch arrangement, this chair is able to negotiate ramps with an incline in excess of twenty degrees and, what is more important, can negotiate a three-inch kerb without difficulty. Constructed on a lightweight Duralumin frame, this chair, when folded, will fit comfortably into the trunk compartment of a Toyota-Corrola automobile, one of the smallest in current production.

The mention of sheltered workshops will inevitably raise the question of the general employability of the disabled and handicapped in the Far East (as if it weren't a problem in the West as well)!

Integration of the disabled into productive society depends, of course, to a large extent on the level of development in any given society. In Korea, where heavy industry is still in the developing stages, the rate of unemployment is relatively high, and wages are relatively low, the employment of the handicapped is the exception rather than the rule. In Japan, on the other hand, partly because of government regulations pertaining to at least the large industries, and because unemployment has never exceeded 2 per cent or so of the population (and even the 2 per cent figure is considered to be a national catastrophe), employment of the handicapped fares a bit better.

Another significant factor with regard to the employment situation of the disabled lies in the fact that in Japan, and this is probably the only country outside the Communist orbit where this holds true, employment is lifetime employment. A worker, once hired, is almost never dismissed prior to reaching the age of 50. He may then be retired with three years' severance pay.

It would go beyond the scope of this presentation to discuss the training of therapists in the Far East. In Japan, for example, there are now about thirteen schools of rehabilitation. All of these graduate physiotherapists, and four of these also graduate occupational therapists. The basic programme is about three years on a non-university level, and I was surprised to learn that practically every school includes at least one American or English faculty member.

There is a great deal of interest in 'new' concepts of treatment. I recall, for instance, visiting a cerebral palsy centre where I noticed a physiotherapist treating children with one hand while holding the Bobath textbook with the other.

In conclusion, let me repeat that American (and European) concepts of rehabilitation predominate in the Far East. The textbooks used in schools of rehabilitation are usually translations. The problems encountered in the area of functional restoration in the East are, however, distinctly different from those in the West.

No imported system or technique will ever be adequate to provide a blue-print for solutions to local problems. At best, they can provide a guide. Local problems require local solutions. I am confident that new techniques and new instrumentation will cause the transplanted tree of rehabilitation to grow roots deep down into native soil.

In the discussion that followed, various questions were put and suggestions made about the spread of technical information on methods and manufactures, including details of modifications subsequently found useful or thought to be desirable, and the need for a pool for the exchange of such information. **PROFESSOR J. M. BREUER** said that while information was usually obtainable on articles that had gone into mass production there was little general knowledge of other types because they were not advertised.

MR NORMAN ACTON said Rehabilitation International had an information centre which was mostly concerned with advanced technology. It had entered into an agreement with Japan for the establishment of a regional information service and was considering doing the same with some African countries. All this cost money, however, and he invited the symposium to consider whether local needs should be met and served or whether attention should be concentrated solely on advanced technology.

MR PAUL BRAND said the matter was an important one. The trouble was that there was no money to be made from simple local appliances. Agencies did exist for the spread of information but the mass available was overwhelming. Some screening was essential and he suggested the appointment of local individuals, at a salary, to sift it and select such technological devices and appliances as they decided, from their own knowledge, would be appropriate for use in the areas they were covering. Such areas might be rural India, urban India, rural and urban Japan, etc. For rural India he could not imagine a more suitable person to appoint than Dr Mary Verghese. The suggestion won considerable support.

PROFESSOR BREUER pointed out that inventors wanted to make money and therefore approached manufacturers or distributors of rehabilitation equipment, a fact which caused much duplication of effort. In many cases, too, they approached the wrong bodies.

MR EUGENE TAYLOR thought the various information systems should be studied to see how the dissemination of selected information could be improved.

A discussion on how disabled persons could pay for an appropriate wheelchair was initiated by **THE CHAIRMAN**, in the course of which **PROFESSOR BREUER** said the whole question of the distribution of rehabilitation equipment needed study. There were national health schemes, insurance schemes, etc., but many people still remained unable to pay for what they needed. The answer, as he saw it, lay partly in bringing pressure to bear on the politicians and partly in promoting the manufacture of cheaper equipment. A mass-produced wheelchair had been brought out in Korea for some \$35. Many labour-saving devices were available in the United States and were of considerable use but they would not be suitable in less developed countries. **DR DAVID WERNER** said some very ingenious wheelchairs had been improvised locally in Mexico at little expense.

DR A. B. CROSS advocated the formation of locally based philanthropical societies to collect money for rehabilitation. It meant hard work for the organizers but it could be done. Supporting this,

DR S. K. VARMA said considerable help was provided by a number of such societies in New Delhi, e.g., the Rotary Club.

Deprecating the distribution of too much unwanted information, THE CHAIRMAN suggested that it should be sent out on request only.

REHABILITATION OF THE UPPER EXTREMITY AMPUTEE IN DEVELOPING COUNTRIES

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The problem of the upper extremity amputee is a constant one in Southern Asia where I have been working for the past twenty-three years. In North India the usual cause of traumatic amputation is the electrically powered fodder and grass cutting machines which the farmers use to prepare feed for their cattle. The original machine was hand driven, and when a hand was caught in the knives it was not difficult for the man turning the wheel to stop so that the hand could be withdrawn, usually unharmed. However, when a motor was attached to the machine, it was almost impossible to stop the hand from being drawn under the knives and chopped off. The farmer might even get his second hand caught, trying to save his first one.

In Bangladesh the majority of the amputations have been from mine injuries, especially the careless handling of small anti-personnel mines being planted in paths to blow feet off a man. Gunshot wounds have been another cause.

Second to war injuries, the tight splints applied to simple fractures by the untrained medicine men in the villages is a major cause of permanent injury. Volkmann's Contracture or gangrene often result in amputation.

The first desire of any patient who has a forearm amputated, is to have a cosmetic hand so that he will look normal. Psychologically he is not prepared for a functional stump or prosthesis unless he is unfortunate enough to be a bilateral amputee, in which case he is ready to accept anything we have to offer. If he is a unilateral amputee and is unable to get a cosmetic hand, he will then put the stump under his shirt, in a pocket, or hide it in some way. The problem, therefore, is twofold – appearance and function. Many devices have been designed either for appearance or for function, and to combine the two. The purpose of this paper is not to comment on the merits of one over the other. Everyone recognizes, however, that few people use a functional device and many amputees don't bother with a cosmetic hand. The experience of designing functional devices, teaching patients to use them, and then seeing the device abandoned by the patient, has stimulated our search for another solution. This solution has been found in the Krukenberg operation.

Since World War I, when Dr Von Krukenberg first described his amputation, the Medical Profession has recognized its possibilities. However, it has not been generally accepted because of its appearance. If this antipathy can be overcome, the true value of the two 'fingers', with their movement, grasp, sensation, etc., will become apparent.

The principle of the Krukenberg operation is to make two large finger-like stumps, using the radius in one and the ulna in the other. These two stumps have sometimes been called 'lobster

claws'. They have many advantages over the mechanical terminal devices. These advantages are listed below:

1. They have very strong opening and closing capability, providing a good grip.
2. They have a limited amount of pronation and supination which aids flexibility of movement.
3. There is normal sensation with stereognostic sense. This is extremely valuable at night, when the usual mechanical device is useless.
4. The stump is much more versatile than a mechanical device.
5. The patient is not dependent upon a device that may fail and leave him helpless.
6. There is a psychological satisfaction in being able to use one's own body.
7. Even with the objection of doctor and patient to the appearance, it is certainly no uglier than a steel terminal device.

The Krukenberg operation itself does not preclude the use of a prosthesis. The patient may be provided with a prosthesis, but he invariably uses it less and less, and the stump more and more. He will frequently abandon it altogether except for cosmesis at times.

A brief description of the operation itself is in order here. The stump should be a minimum of three inches below the elbow or tip of the olecranon, and should not be over six inches long. Longitudinal incisions between the radius and ulna on the volar and dorsal aspects are made. The muscles are freed up where they have been attached on the end of the stump. The interosseous membrane is split and the two bones spread wide apart to a distance of five inches if possible. The small muscles of the hand and the flexor digitorum profundus are totally excised. The muscles are divided putting the flexors and extensors on the radial side into the radius, and on the ulnar side into the ulna. We have made certain modifications of the insertions of the muscles after checking their actions at the time of surgery. These modifications have not improved the patients closing strength significantly. We have found that the muscle action does not necessarily follow the usual function, as a new set of actions is required of the stump from that of the normal hand. Some skin grafting is necessary in closing the incision. Within a week after surgery the patient is taught to open and close his stump voluntarily.

Case Histories – Upper Extremity Amputees

Case 1

Nurul Islam, a guerrilla Freedom Fighter aged 18, was sent out early one morning to plant mines in the road. His friend was covering him with a rifle. The mine which he was planting exploded when he bumped it. Both his hands were blown off. He was given emergency treatment in the guerrilla camp. When the war ended just two days later, he was given further treatment. Later he was admitted to our hospital where the Krukenberg operations were performed.

Three months following his operation he began work in our Social Services Department. He was a high school graduate, and intelligent. He completed his Intermediate Science at night school. In the Social Service Department he developed an interest in the Library. He was transferred to work under our Medical Librarian, who stimulated his interest further. He did a Library Diploma

course and is now studying for his B.A. The plans are for him to eventually take over charge of our Medical Library.

Case 2

Sattar, aged 16, a guerrilla Freedom Fighter. He was crawling up with his company on to an enemy camp. He put his hand on an anti-personnel mine and when it exploded it blew off his right hand and blinded his eyes. He was given first-aid. When the war ended two days later, he was given further treatment. Six months later, when our hospital opened, he was one of our first patients. We immediately did a Krukenberg operation. Not long thereafter he was taken to Rumania for treatment of his eyes, but nothing could be done. When he returned to us he was hired as a telephone operator and has been working at that post since. He has become very proficient at memorizing telephone numbers and making calls as required. In this country, making calls is a time consuming affair, and Sattar is a valuable asset in this work.

Case 3

Mahabulbul was aged 18, a Freedom Fighter. He was deputed to lay anti-personnel mines in the paths. When his hand slipped in the mud of the same path, the mine exploded and blew off both his hands. His hands were further amputated by the company doctor, and he received further treatment in India. He was admitted to our hospital seven months after the accident, and bilateral Krukenberg operations were performed. Soon thereafter he left to complete his matriculation. He rejoined our hospital to work in the Record Room. He became very proficient in handling hospital records, filing and issuing them, and entering the data into the record books. Recently he has been put in charge of the Records Department, and is developing into a very responsible employee of the hospital.

Case 4

Ali Nawaz was aged 37, a Freedom Fighter. His company was launching an attack and he ran into machine-gun fire. The entire anterior quarter of his mandible was blown off. His left eye was destroyed and his right hand severely mutilated. Seven months later he was admitted to our hospital with an open sinus between his mouth and neck through which all fluids drained out. The sinus was closed first. The right hand was partially reconstructed. He was then sent to Switzerland for extensive plastic surgery to his face. When he returned from Switzerland he was hired in our hospital, first as a window washer, and later as an errand boy. He is still serving in this capacity.

Case 5

Munir, aged 14 during the war, discovered an unspent bullet. As any boy might do, he started to play with it. It exploded, blowing off his entire left hand and mutilating his right hand. He was brought to our hospital shortly after. He was treated by doing a Krukenberg operation on the left hand, and partial reconstruction of the right hand. One year later he was hired as an errand boy. Because of his intelligence, he has been promoted to work at the Reception Desk.

Case 6

Sadiq, aged 18, was a guerrilla Freedom Fighter. When he crawled up on an enemy camp he touched off an anti-personnel mine which blew off both hands and blinded his eyes. Six months later, when our hospital was opened, he was one of our first patients. We advised the Krukenberg

operation, but he refused. All that he wanted at that time was to be able to see. Since there was no ophthalmologist here at the time, we encouraged him to allow us to operate on his hands. We were unable to convince him. Instead, he begged for poison to kill himself. By continual persuasion, he eventually agreed. The operations were done bilaterally and within one week he began to use his new hands. After three weeks he was able to feed himself with a special spoon. His life changed dramatically. He became pleasant instead of being morose. As he was lead around the hospital he began taking a real interest in life. Later he was sent to Rumania where his eyes were operated on and he regained sight in both eyes. He is now a pleasant, happy worker in the hospital. He works on the Reception Desk, and because of his having been connected with the hospital since its beginning, he is a valuable asset.

Case 7

Lutfar, aged 20, was a guerrilla Freedom Fighter. He, too, lost both his hands when he crawled up on an enemy camp and struck an anti-personnel mine. When he came to our hospital a few months later, the bilateral Krukenberg operations were performed. He was one of the most eager to learn to work with his new hands. He was given a job in the Record Room, and soon became very adept at turning keys, writing, filing records, etc.

All of the above upper extremity amputees were sent to the German Democratic Republic following their Krukenberg operations. There they were fitted with cosmetic prostheses only, as it was not felt that functional prostheses were indicated.

All orthopaedists who have had experience with a Krukenberg operation readily admit its extreme value for the bilateral blind person. Our contention is that it is just as valuable for anyone with the loss of a hand, though he may not develop his stumps to the highest extent that is possible, as in the case of the bilateral amputee.

Three of these amputees, two bilateral, and the third the blind boy with a unilateral amputation, live in our home as part of our family. We have been able to observe them in all situations. They do their own cooking, though we serve them breakfast to ensure that they get to work on time! They do their own washing, and they press their own clothes with a lightweight travel iron. They take care of their own rooms, their personal toilet, etc. They are always very neat when they go out, being properly shaved, neatly dressed and well groomed. The two sighted boys take care of the blind boy. It is of great interest to see them feed themselves, write letters, open and close doors, operate the telephone, and be totally independent. We have treated them as though they are normal in every respect.

Conclusion

This paper deals with the Upper Extremity Amputee who has been rehabilitated in a developing country. Here there was no access to even the simplest mechanical hook or hand, let alone the sophisticated devices being used in some of the richer countries. The Krukenberg operation, although described in 1917, has never been given its proper place in the world. In my mind, it is the best type of procedure for anyone with an amputation two and one-half inches or more below the elbow. It is superior in all ways to any mechanical device. It does not preclude the fitting of a cosmetic or functional hand.

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Display of Equipment by Miss J. K. Hutt

The display was of rattan and bamboo aids for physically handicapped children made locally to Miss Hutt's design when she was working as physiotherapist for the Spastic Children's Association in Johore, West Malaysia. It included walking aids for small children, chairs with adjustable seats and removable trays and photographs of other aids such as cane calipers which a child could remove himself if necessary. Miss Hutt had been led to pioneer the local manufacture of such aids because the cost of imported equipment was prohibitive and the equipment itself usually unsuited to the build of the local inhabitants and their way of life. For instance, the custom was to sit either on the floor or on much lower seats than those used in the West and to use squat toilets so that walking aids needed to be designed to facilitate standing from floor, not high, sitting, and long leg calipers capable of being removed for the use of the toilet. Rattan was easily available locally and well-established rattan workshops existed in all large towns. Repairs could be carried out at any small village cane shop. Good quality rattan also withstood the changes of a tropical climate, was cheaper than wood or metal, was more pliable and when heated could be moulded into almost any shape which it then retained. The woven network used for seats and backs of chairs, etc., allowed the air to circulate and thus reduced perspiration and subsequent heat rash.

REHABILITATION AIDS FOR SOME PHYSICALLY HANDICAPPED IN NIGERIA THEIR IMPROVISATION AND ADAPTATION

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Introduction

Any person who is associated with the management of the physically handicapped in the developing countries is apt to come across difficulties and problems which might hinder delivery of health care in his or her particular discipline.

These problems could be medical, social, economic, educational, vocational and others. A quick appraisal of each problem as it occurs poses a big challenge to the therapist.

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The challenge might call for ingenuity in the improvisation of aids based on need and local adaptation. Whereas in most developed countries, facilities abound in many ways to make rehabilitation of the disabled easy, developing countries lack such facilities. I have in mind walking, locomotion and supportive aids, e.g., calipers, prostheses and wheelchairs which are not readily available in most developing countries. The same applies for other rehabilitation aids which help quick recovery and independence in the performance of daily living.

Most of these problems had been discussed at the first, second and third symposia on rehabilitation in Africa and the developing countries, organized by the National Fund for Research into Crippling Diseases. One observes, however, that some of the problems are still in existence. In some countries they are diminishing, in others they are on the increase. The National Fund, under a dynamic director, in the person of Mr Duncan Guthrie, has not ceased, though based in the United Kingdom, to show keen interest in the welfare of the disabled millions throughout Africa and other developing nations. This is evidenced by representatives from about forty countries who are gathered here to exchange and share views and methodology on how to help the disabled. I am, therefore, grateful for the invitation to participate in this very important Symposium. I trust and hope that we shall leave here better enlightened and armed with ideas which will be of value to the disabled in our respective countries.

The Physically Handicapped in Nigeria

For the purpose of this presentation and because of the limited time available, I will concern myself with poliomyelitis children, amputees, hemiplegics and paraplegics.

Poliomyelitis

As the majority of us here already know, poliomyelitis is one of the most crippling diseases in developing countries. Nigeria, of course, is no exception. It is predominantly infantile with the age of onset ranging from two months to about six years. The lower extremities are affected in the majority of cases. Most physiotherapy departments in Nigeria treat polio victims. Their number is on the increase throughout the country because there is no compulsory nor mass immunization against the disease at the moment. In 1967, 3,142 treatments were given to polio children at the University College Hospital, Ibadan. Last year (1975) the number was 12,270 treatments.

The disease is endemic and no particular season of the year can constantly be associated with an increase in patient intake at the hospitals and health centres. Though Collis *et al.* (1961) indicated that the onset of the disease was more prevalent at the end of the dry and rainy seasons respectively, later studies (1966–1975) conducted by the author in physiotherapy departments throughout the nation have shown a contrary view to this report.

One major problem in rehabilitating the teeming number of polio children is the inavailability of suitable rehabilitation aids, e.g., calipers and spinal supports. Only four major prosthetic centres in Nigeria – (population – 70,000,000) – make calipers and prostheses which take up to six months for delivery after measurements. For growing children there is often loss in time and money since they usually outgrow the appliances by the time they are delivered.

At the University College Hospital, Ibadan, the Occupational Therapy Department uses local leather and flat iron to make knee cages with attached toe raising device to check foot drop when

necessary. When shoes are bought by the parents, leather pieces are sewn to the sides of the heels to act as modified posterior steps. This measure has limited the hardship of some polio victims.

Many hospitals in Nigeria do not have an Occupational Therapy Department. In such hospitals the physiotherapist, if available, makes plaster of Paris back slab as substitute for a knee cage. At times, long leg plaster of Paris are made. Rubber shoes made from old motor tyre and inner tube are worn over the plaster to permit walking. In the absence of calipers and splints a child being unable to walk crawls about. Sometimes the mother may strap him on her back in crouch position. The positions (crawling and strapping on the back) may cause contractures of Tensor Fascia Lata, Hamstrings and Tendo Achilles, thereby worsening the child's disability.

A child with paralytic scoliosis has a bigger problem than the others. Corrective spinal or minerva jacket made from plaster of Paris bandages is not comfortable, under intense tropical heat, as permanent wear. Milwaukee braces which are comfortable and offer better corrective supports are only available for the few patients whose parents can afford to pay for them and wait for their importation from overseas countries.

Plastazote and orthoplast, though light, perforated and durable, are similarly uncomfortable to most patients who wear jackets made from them as well as from leather because of heat and the large area of skin involved. For other types of splints they are quite suitable.

In the absence of Milwaukee braces, the jackets are changed frequently in order to permit washing and toileting of the skin. This procedure has minimized the patients' discomfort.

Walking Aids for Polio Children

As most polio children are out-patients, they attend the hospitals primarily for physiotherapy. This includes, *inter alia*, learning how to walk in parallel bars or with the aid of walkers, crutches and sticks. Walking practice at home is not easy for some of them. The traditional type of wooden child walker made and sold by local carpenters are not collapsible. The walkers are cumbersome and cannot be carried easily from place to place as when mother travels and wants the child to practise walking. Aside from this, the problem of storage bothers many parents. A bed-sitter room for a low income Nigerian male may be of the size 10 ft × 12 ft. In this small area he and his family keep all their belongings, including bed, table, chairs, boxes and other things. The storage of a traditional type child walker in the same room is therefore unwelcome.

For this reason, the author designed child walkers which can be folded and stored away behind doors, under the bed or on the wall. The mothers can also take them along when travelling. The walkers, including the wheels, are made of mahogany, oro and iroko woods, i.e., *Khaya ivorensis*, *Nesorgodonia papaverisera* and *Chlorophora excelsa* respectively (botanical names).

Amputees

The causes of amputation are varied. Road traffic accidents, elephantiasis, chronic tropical ulcers, leprosy, snake bites, gangrene, burns, osteomyelitis, malignant tumours are a few. Whilst a unilateral lower extremity amputee is waiting for his prosthesis which may not be ready for fitting until about four to six months after measurements, he goes about on a pair of crutches.

Users of conventional types of axillary crutches suffer at the hands of taxi drivers who will not

accept them because there is no room for the long crutches in their cabs. For this reason appointments in the hospitals were not promptly kept. Often they lead to absenteeism. The majority of Nigerians rely on taxis and public transport for commuting. A few people, of course, have their own cars. In order to enable the amputees and other crutch users to keep hospital appointments and get around with ease, the author designed folding crutches (Oshin, 1973) which can be kept in the car boots or by the side of the patient when travelling in motor-cars. These have helped to alleviate the sufferings of crutch users who rely on public transport.

Hemiplegics

Home care for this category of disabled people is essential quite apart from physiotherapy management in the hospital. For mobilization or prevention of stiff shoulder joints, a reciprocal rope and pulley circuit is improvised and adapted for home use. The pulley is made of 'EKKI' wood – locally called 'iron wood' because of its strength and durability. The hand bars are made of mahogany or iroko wood. The rope is similar to the orthopaedic cord used for sustaining tractions in the hospital. The pulley circuit is tied to the beam of bed or the branch of a tree in the garden for exercise practice. The circuit is also used in the hospital by other patients who have limitation of shoulder movements due to arthritis, trauma and other conditions.

Paraplegics

Falls from kola nut, palm trees and roof tops as well as tuberculosis of the spine and road traffic accidents are the commonest causes of paraplegia in Nigeria. At the stage when the lesion is consolidating, the patients are given aids which assist them to get up to sitting position from lying. This is a temporary measure as patients are encouraged to do without the aid later on.

The ones devised at the University College Hospital, Ibadan, are very simple. Orthopaedic cords in two lengths are knotted at intervals of eight inches (20 cm) leaving a loop at one end. The other end, which is free, is secured firmly round the open end of the bed with a clove hitch or other knot.

The patient, in order to assume a sitting position, progressively pulls on the rope. This device is much more useful for weak and post-operative patients as it helps to facilitate independence. The other type has double orthopaedic cords passed through corresponding holes in a set of wooden cleats. The cords are knotted close to either side of each hole at intervals of eight inches (20 cm). One end is a loop and the other free end is similarly tied to the open end of a bed.

When used as a trapeze, it is hung on or tied to the overhead bar of the bed so that the patient can climb on the ropes with his hands holding on to the cleats for support. By so doing he lifts his seat up for bedpans, etc.

Other Rehabilitation Aids Adapted for Use in Nigeria

1. Crutches for children – single upright adjustable axillary crutches made of wood.
2. Walker/seater made of wood for arthritic, respiratory, cardiac and weak patients.
3. Collapsible tripod walker made of wood.
4. Rubber shoes made from old motor tyre and inner tube.

5. Wooden shoe with old motor tyre as soles and old inner tube as straps. It is used as a raise for non-weight-bearing crutch walking for patient in hip spica cast.
6. Toe raising device to control foot drop in common peroneal nerve lesion in children. It requires zinc oxide strappings and rubber bands (Oshin, 1974).

N.B. – 1, 2, 3, 4 and 6 are made to author's designs. They can also be used in other countries.

Summary and Conclusions

This paper has highlighted how we have tried in Nigeria to help some disabled people to lead a useful and happier life despite their handicaps and other shortcomings.

Compulsory mass immunization of all children against poliomyelitis should be embarked upon as this will eradicate the disease and thereby reduce the demand for rehabilitation aids.

It should be the interest of all concerned to design simple aids for the use of patients in situations where they are lacking.

Workshops for making these appliances should be increased in all developing countries. In fact they should be within reach of most hospitals and rehabilitation centres. They need not be very elaborate.

Finally, I wish to appeal to the National Fund for Research into Crippling Diseases to publish booklets on rehabilitation aids adapted for use in developing countries of the world.

The main points in the report stressed by MR T. ABAYOMI OSHIN were the large numbers of children in Nigeria who suffered some form of crippling disease, polio being endemic and increasing because of the absence of any compulsory mass immunization scheme, and the fact that there were so few major prosthetic centres in the country. In the case of growing children, this often meant that when at long last the appliances were delivered they were too small and could not be used. Even when the appliances were in fact usable some of the handicapped rejected them out of hand because they did not conform with local customs. Until these difficulties could be dealt with it was necessary in many cases to improvise, using such materials as were available. One of the great needs was for walking aids and MR OSHIN showed slides of crutches of local wood made specially for walking in mud, and of folding walkers that could be stored in the average Nigerian home and easily transported. He also showed shoes made of old motor-car tyres and inner tubes that could be worn over a plaster. Other illustrations were of children strapped on the mother's back in a way that caused contractures in polio victims; of other children unable to do anything but crawl thus causing contractures of the arms and legs; of various kinds of folding crutches that could be used in cars and public transport; and of different kinds of pulleys for use by hemiplegics and paraplegics. MR OSHIN also mentioned the help that could be given by mothers who were becoming interested in exchanging ideas and experiences when they brought their children for treatment by the physiotherapists.

DR R. PFALTZGRAFF drew attention to the great variations in the situation throughout Nigeria as between the different regions and the urban and rural areas. The only thing was to proceed by trial and error. He had himself trained ex-patients as technicians with great success. He agreed that cosmesis was usually preferred to functional ability but personally he aimed only at functional rehabilitation. The developed world must take note of the fact that, if cosmetic types of prosthesis

were provided or became available, other types of prosthesis would not be used. He was able to provide perfectly adequate prostheses for below the knee amputees at only a tenth of the cost of the cosmetic types and that could be made in four-and-a-half hours of working time. These had a life of between three and ten years and once his patients had learnt how to use them – which required both time and patience – they were perfectly satisfied with them and were able to return to their homes and take up their normal lives again. He preferred ordinary peg legs for anaesthetic stumps as feet, if added, were apt to wear out in about three months. In reply to a question, he said he did not find it took long to train technicians in the simple procedures that were required.

MR BRAND said he had made prostheses himself and taught others to do so. What was needed in the developing countries was a method or methods of adapting sophisticated techniques to the local background; the introduction of certain elements from the western workshop world could do harm not good. He instanced the use of a liner which produced a perfect fit for a stump but for this it was essential to have supplies of the right resin and other materials. In India, for instance, import restrictions prevented them from getting supplies of plastazote. DR PFALTZGRAFF added that it was now impossible to obtain microcellular rubber in Nigeria and the possibility of producing it on the spot was being investigated. MR NORMAN COOPER said the supply of the right raw materials was the number one problem throughout the developing countries. The UNESCO Florence Agreement advocated the abolition of all duties on raw materials and there was to be a recommendation that all materials for use on behalf of the disabled should be given duty-free entry. The Agreement still remained to be ratified. MR NORMAN ACTON said his organization had been asked by UNESCO to study the Agreement and the whole question was to be thoroughly discussed at the UNESCO meeting in Nairobi the following month.

Acknowledgements

I would like to express my thanks to the patients who have inspired me to think of designing rehabilitation aids for their use; to the Federal Forestry Research Institute, Ibadan, Nigeria, for technical advice on species of wood; to the staff of the Medical Illustration Unit (University College Hospital, Ibadan, Nigeria) for diagrams, photographs and slides.

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PRINCIPLES FOR FABRICATION OF SIMPLE LOWER LIMB PROSTHESES

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Summary

The fabrication of simple but fully functional prostheses for below-knee or above-knee amputees is presented, using techniques that do not require a fully qualified prosthetist, expensive tools, or supplies.

Introduction

The prostheses discussed can be made for either below-knee or above-knee amputees by simple alterations of technique, but it does not simulate the human limb, and will not be acceptable where more conventional artificial limbs are available.

The limb is made in a cone shape without ankle or foot, and no knee joint is included for the above-knee amputee.

In this situation it has seldom been a temporary alternative, but is the final, permanent limb. They last from three to ten years or more. At present the work is all done by a locally trained prosthetic technician.

Ninety-four of these limbs have been made in the past five years.

No attempt is made to simulate the human limb. Although pigments are available, seldom do patients request us to attempt to duplicate skin colouration.

Materials

The basic material required is a plastic resin. Epoxy resin is the most satisfactory although more expensive initially, under difficult conditions it is more stable.

For below-knee limbs a *Plastazote* liner is used.

Tanned goat and cow hide are used in small amounts.

A tyre rubber sole is affixed to the distal end.

Hardware used in the above-knee limb are a nut and bolt, a grommet, buckle and D-ring.

Methods

Absolutely essential to success in the use of these techniques is proper preparation of the stump. It must be shrunk to a stable size, and the skin toughened by daily massage and use of an elastic bandage. This may take several weeks after healing of the site of amputation.

Below-knee Limb

The socket for the prosthesis is made directly on the stump. First make a liner of $\frac{1}{4}$ inch *Plastazote* that covers the stump to well above the patella. The heated *Plastazote* is moulded over the stump

by wrapping with an elastic bandage until it hardens. A layer of $\frac{1}{2}$ inch *Plastazote* is fixed over the distal end.

To make the resin socket this *Plastazote* liner is covered with a layer of thin polyethylene sheeting, over which two layers of orthopaedic stockinette are applied, and impregnated with epoxy resin.

Simple Lower Limb Prostheses

A small pad of some material should be applied to make increased pressure over the patella tendon area, and the entire socket then snugly wrapped with ordinary bandage which becomes incorporated into the resin. When the resin has set, it is removed from the stump, the liner removed, and the shell trimmed. Then add an extension cone, using a 3 in. to 4 in. cylinder of wood for the base of the limb. Corrugated cardboard or X-ray film are used to connect the socket to the wooden cylinder making it the proper length. This is then covered with two layers of stockinette that are impregnated with resin. When this has set, two to three layers of stockinette are applied and impregnated. Preferably here use a polyvinyl alcohol sheeting cone.

When completed and trimmed the liner can be replaced and careful walking started. Add the rubber tyre end-piece first. If necessary, to keep the limb in the socket, add a rubber strap encircling the knee proximally. Most frequently this is not needed.

When the stump has become stable and the patient is walking fairly well the brim of the liner is trimmed even with the resin socket and a leather trim glued in place over the edge of the socket.

Above-knee Limb

The procedure for an above-knee limb is somewhat different. First make a plaster of Paris mould of the stump extending well up into the groin anteriorly and over the lower part of the buttock. This is made over a single layer of stockinette. The ischial weight-bearing area is moulded by pressure of the fabricator's hand as the plaster sets. Use the right hand to press firmly below the ischial spine. For the right leg of the patient use your right hand, and for the left leg your left hand; asking the patient to 'sit' on your hand. The contours of this socket have to be altered by pulling away the stockinette in two areas and adding plaster. These are done to fill the depressions distal to the ischial seat, and distal to the depression made anteriorly by the thumb. Plaster must also be added on the outside of the socket to fill in the depressions.

Dry this socket thoroughly, before replacing the stockinette that was pulled loose to alter the contours. Then impregnate the inside with epoxy resin until the surface is smooth. The outside is also covered with two layers of stockinette impregnated with epoxy resin.

Make up the length with a cone just as for the below-knee limb.

There is no liner, and no stump sock should be used. Fitting is not nearly so critical on the above-knee, as for the below-knee.

A Silesian bandage type of waist band is made, fixing it to the socket with a nut and bolt. The bolt is fixed into the resin at an earlier stage.

Careful walking is begun in a graded fashion first using a walker, then crutches, and finally, free walking.

Simple Lower Limb Prostheses

Discussion

There are a few points that need special emphasis regarding these techniques, and some of the following is repetition of the introduction.

1. These simple and inexpensive prostheses will only be acceptable if conventional types are not available. A patient's desire for appearance outweighs the demands of function. The below-knee limb actually is an improvement on conventional limbs so far as function is concerned. I doubt if that can be said for the above-knee limb.
2. A prosthetic limb must be socially acceptable. This will not be the case in a society that knows there is a potential for wearing a cosmetically approved limb.
3. There are some factors that relate to the attainment of ideal function.
 - (a) A co-operative and capable patient. The African is an expert walker. With past experience he can learn to ambulate where others would never succeed. People with extreme deformities of polio always develop some means of getting about where a European would be confined to a wheelchair.
 - (b) Surgical techniques for the production of a good stump should always be followed. The one exception we have found is that the stump should be made as long as is possible, yet still providing good bone coverage. The longer the stump, the larger the weight-bearing area provided, and the better the person can control the prosthesis.
4. The procedures outlined here have been used for several hundred patients, and are proven. Any deviation from them should be made with caution.
5. Patient training. This may be the most critical point of all. A limb cannot just be given to the patient, and he be told to walk away. Efficient ambulation takes a great deal of patience on the part of both staff and the patient. The patient must be willing to co-operate, and to give all the time it takes to walk well, and without producing injury to the stump.

After the limb is completed there must be a long period of graded ambulation. At the very first sign of damage to the stump, such as swelling, redness, heat, tenderness or blistering, walking must stop until full healing has taken place, and a few days after all signs of inflammation have ceased. There has never been a failure – patience and perseverance will always win.

The patient must be carefully educated as to the proper care of his limb – the prosthesis, but more importantly, of his stump. STOP use at the least sign of injury. Most of the people we have fitted have had leprosy, and some of them with anesthesia of the stump, yet it is possible to get a person ambulatory despite anesthesia.
6. Many ideas have been adapted from others in developing these prostheses. For the below-knee limb much of it comes from standard well-known procedures for fabrication of a PTB limb. For the above-knee limb we refer frequently to the reference given.

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A REHABILITATION EXPERIENCE WITH CAMEROON ANIMISTS

SISTER CECILE

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Introduction

Cameroon is officially listed in world atlases as being part of Central Africa. Culturally and geographically, Cameroon is generally accepted as belonging to West Africa. The Phoenician explorer, Hanno of Carthage, called Mount Cameroon, 'The Chariot of The Gods'.

Just where is the Cameroon? It is wedged like a triangle between Nigeria on the West, Tchad and Central African Republic on the East. At the North, its tip dangles from Lake Tchad and to the South sits on Equatorial Guinea, Gabon and Congo. The base of the triangle is about 800 km long and a hypotenuse of 1,500 km. The surface is approximately the size of California or $\frac{1}{6}$ of France.

From the Southern coast alternating between black silent mangrove swamps and clean white beaches, one reaches the tropical belt, a huge green carpet broken only occasionally by a tiny village or thread of a road. The forest gives way to pastures of fertile, rounded slopes. These in turn suddenly become abrupt angles of uneroded rock – the canyons and badlands of Central Cameroon. Then the dry savana plains of the North gradually unfold, dun-coloured all year except during the short rainy season. The land becomes progressively more arid, finally becoming desert. But parts of this flat bush land contain as rich an abundance of wildlife as one can find anywhere in West Africa.

The population is as diverse as the landscape, with more than 150 ethnic groups represented among its 6,000,000 inhabitants. Though French and English are both official languages of the country a large number of tribal languages are spoken. In the Muslim North, Fulani predominates, in the South the major languages are Bamilike, Ewondo, Bulu and Bassa. A delightful version of pidgin English is also spoken in the former West Cameroon and parts of the East.

Although most of the population is rural, the country boasts several large urban centres. The capital, Yaounde, beautifully situated on a mountain-ringed plateau, has a population of some 180,000. Douala, the largest city and commercial capital has a steamy port and also a jet airport linking the Cameroon with major cities of the world. It has a population of 240,000.

The change of climate may be divided into three zones: on the Eastern coast we have the coolest weather – an average of 70°F. Douala, the seaport and Yaounde, the capital – an average of 80°F. Ngaoundere, the pasture lands (centre of the triangle) an average of 72°F and a maximum of 91°F. Garoua and Maroua in the North, where I am, an average of 88°F and a maximum of 117°F.

The majority of the African countries are young. The Cameroon has 50 per cent of the population less than 15 years old, 5 per cent over 60, and 51 per cent of the population are women.

The percentage of Animists are approximately 40 to 45 per cent, the Christians are some 35 to 45 per cent and the Muslims are 20 to 25 per cent.

Christianity has made important inroads in the South, while in the North, Islam has put its imprint on the culture of the people.

Cameroon's first inhabitants were Pygmies, who lived throughout the country, deep in its forests. During the 10th century, the Sao people from the North settled on the banks of Lake Tchad, where they developed the 'baked clay civilization'. That in recent years has attracted archaeologists. During the 15th century, the great migration of the Sudan was spreading across Africa, with the Massa, Mundang and the Toupouri tribes remaining in North Cameroon to settle. During this same period, the Bantu were also moving westward, and the tribes that settled in Cameroon were the Bamilike, Banen and Bassa. During the 17th century a second wave of Bantu approached Cameroon from the South. The Douala were part of this group. The Fang reached Cameroon in the 19th century.

In modern history, Cameroon was first visited in the 1500s by the Portuguese navigator, Fernando Po, who named the country for the shrimp found off its shores.

It would be absurd to communicate the ways and means of making home-made crutches, splints, walking frames, rails or parallel bars without first informing you that most of my handicapped are Animists, who are living within the scope of traditional healing. That is to say, it takes into account the total cultural set-up of the patient. It does not separate the body from the spirit, nor the individual from society, nor the invisible universe from the visible one.

Animisme is a term invented by Taylor to define primitive beliefs in spirits. The Animist sees in water – tree – mountain – a spirit. A pagan religion is practised by all the villagers. The word 'paganus' means the villager. It is opposed to the religion practised by the city dwellers. All Animists have specific peculiarities. The neighbouring villages may not necessarily have the same beliefs but all are usually tolerant.

Since the pagan religion is written in the village itself, we must look at the different places that are considered by the Animist as 'sacred'.

In all primitive beliefs the mountain is 'sacred'. It dominates all the surroundings, it is the receptacle of the sacred, it is the place of revelation and of power. People do not usually settle on the mountain. But for certain groups the mountain is the abode of a spirit manifested in the form of a python, and with a person attached to his service for the offering of sacrifices. A young girl also lives here and her work is to alert the villagers in time of danger. Therefore the mountain is a place of protection in time of war, is a place of survival and hiding place for millet and water in time of famine, is a sort of signpost when lost in the bush and is a stepping-stone to heaven. Divination and certain sacrifices take place here.

Certain trees are also sacred. The Animist keeps at a safe distance from these areas. This is where the spirit of the dead lives. Upon the death of a man the dead man roams around his hut for three days – for a woman, she roams around for four days, and then the ritual for the dismissal takes place, and they in turn join in with the others. The living man eats millet but the dead eats the soul of the millet. The millet is the only plant that has a soul.

Now, at harvest time a certain period for fasting is imposed. That is, no noise, no singing, no dancing, no quarrelling, no late hours and no drinking of beer in large groups. All this is done out of respect for the dead who are present in this particular area and in communion with the living who are about to offer the sacrifice of thanksgiving for the harvest. The dead is considered inferior to the living but more powerful.

Let us turn to the ponds. Why are they sacred? The pond is the 'underworld' – the 'invisible uni-

verse', the habitat of all spirits, the habitat of the dead, the habitat of the geniuses. The pond is the abode of these spirits manifested in crippled children and monsters who are exposed near the pool where they will return to their liquid element, the underworld. Not all ponds are sacred. But those that are speak to the primitive, to the villager. Water means 'LIFE'. The crocodile resides here during the rainy season and hibernates in the caves during the dry season. We have the contrast – LIFE AND DEATH. It is the symbol of the eternal.

With this brief exposé try to visualize and feel for the handicapped who ventures 'the risk of another bird of ill omen', that of rehabilitation at the mission.

The handicapped is already an outcast. Members of the clan are fearful while the immediate family has already consulted many a traditional healer and quack. The last resort is the mission.

He usually comes wearing all sorts of talismans, amulets, fetishes, wishbones and what not. He may be covered with ashes, have long hair tied with different bones, pebbles and amulets, or maybe shaven. He may be stark naked, or draped with rags. He may even come all soiled but covered with a brand new wrapper around his shoulders.

You may well realize that *a priori* all sophisticated equipment of our modern world is questionable!

Being conscious of all this makes one more attentive to the group that comes for help. We must not push them into this work of rehabilitation. We must wait until they ask for admission. Even if they come to the mission for help it does not necessarily mean that they want to walk again. We must respect their desires and try to liberate them at the same time. Creating an atmosphere of friendliness is difficult if the vernacular is not spoken by the physical therapist. An interpreter will never be able to translate this word of anguish. The Mundang tribe with which I work have no abstract words whatsoever in their vocabulary. So how are we going to understand one another? By being patient and by taking all the time needed to listen, and to listen again to all sorts of tales. Certain missionaries claim that working with the Mundangs you have to become patient or you go berserk.

It is from these tales that we try to scrape up enough information to start the different case studies. From this information regardless of all the fantasy we always have a 'lead'. Nevertheless, we are more than conscious that the people before us are doing their utmost to answer all our questions with the right answers, the ones that will please the white man. After a few days, maybe weeks, the villager plus the members of the clan begin to ease up a bit. Apparently, they seem more relaxed and undertake the task of breaking new ground. Listening to all this at first, I thought it was a loss of time and a bit of nonsense. But after reflection, I realized that these tales did make sense to them. Their logic is not mine, but they do have a logic.

Let us give our attention to a list of details given by the different families who have already received help for their crippled children:

My boy was tending the goats and during the morning stopped to play by a termite hill. His legs began to melt away . . . (We listen.)

While out in the bush to gather kindling wood, I saw a python near by and walked upon his path. Some time afterwards, I gave birth to a crippled child. You know, in our clan whenever a

pregnant woman sees a serpent she is bound to give birth to a monster . . . (We listen and we listen.)

Another placing a paraplegic youngster, of about seven years old, at my feet: He's yours. I give him to you. You are the white man and you have the secret. Do whatever you want with him. Do whatever you want . . . (We listen and we listen again.)

Why did you come here? Oh! I had a dream, a dream! That is why I come to you. Do something. Do something . . . (And we listen and we listen again.)

And another: My son hasn't tasted his body for days – *that is the expression used to say they are ill* – his body was hot, so very hot that his body became dead. We rushed him to the white man. He injected him with the white man's medicine. His legs remained dead. We went to the 'Pakendan' – *that is one of the many traditional healers* – he placed the blood of a rooster on his heels and told us to come to you . . . (We listen.)

Now you can size up the type of clients that come to the mission for rehabilitation.

Daboule, a polio victim of about 8 years old, was my first child to work with in rehabilitation. I'm no professional, so you will be kind enough to overlook my medical blunders.

Daboule is on all fours, his deformities make him an outcast. The people call him *the monkey of the mountain*. His parents are Animists, and most neglectful of their son. He must look after himself more or less. His hands are permanently clenched because the heat of the mountain is so great. He has developed this claw-like position to protect himself from the burning rock when he wanted to displace himself. His knees are calloused by his contractures. His blank expression is most pathetic. My heart went out for this child. For weeks I cared for him; exercises, baths and massages. After a few days I was getting all keyed up because I would only get a few grunts but never a smile from him. Frustrated to the core – stung to the quick – I blew up! 'Buddy, if you can't give me a smile and a few words, you will just have to return where you came from.' Well, that was the magic phrase. From then on, I could not shut him up; straight walking, with his head up, like a man, like everybody else.

The flexion contractures of the knees needed corrective surgery. The idea had to be tossed aside, we had no surgeon at that time. Let us work with what we have. In other words, let's create.

The *crutches* were made from 'BARGIEM', a tree found in the mountain and also in marshy areas of the bush. The trunk of the bargiem tree is hard and black. It is as strong as hickory or oak. An important detail – the termites do not eat this wood.

The *calipers* – another vision of the surplus material from back home – the highly polished braces, the fine polyester girdles, etc. I had to leave my world of fancy and come down to reality.

Walking in the back yard, where everybody puts the junk that may one day be of use, I spotted a long rusty iron bar, salvaged from the new sewing school construction. Rubbing off the rust from this bar was Daboule's job. He rolled and rolled this bar in the sand until it became nice and smooth. All the while he knows that this will be part of his harness. We measure his legs and cut the bar into four. I need something to hold this in place, some sort of adhesive, a *Velcro*. . . . But Daboule is a Mundang. Mundangs are hunters. The older generation dress with goat skins. Cutting

the goat skin and designing the thigh and ankle support was not a problem but as for the knee joint we did have difficulty. It did not hug the kneecap enough for support so we had to wait and think about it. IDEA – the bladder of the donkey is more flexible and soft. And it worked. The hip, ankle and knee supports are not complete. We need something to tie them. The goat skin is not strong enough so off to the market where the slaughtering of the zebu cows take place. There I was able to obtain the necessary cowhide. Cutting this into narrow strips I was able to lace the supports quite well.

Daboule has his first try out with the calipers. He's seated on a straw mat and I asked, 'How does it feel?'. 'Not bad' was the reply. *ouf!* Thank God. And with the bargiem crutches and calipers, Daboule stayed all of eight months learning to walk with the improvised equipment.

I must admit that his gait was far from being esthetic but it was a happy experience to see him walk. From this experience the number of people coming for rehabilitation jumped from Daboule to 12 patients that year, 25 patients in 1971, 36 in 1972, 100 in 1973, 125 in 1974, and last year after the first 100 I stopped counting – the register was full. To this day I must have a little over 300 children walking with crutches and calipers.

I must be honest with you. I had to have outside help for the supplying of material for such a number of polio victims. The material coming in from abroad is an immediate solution to the problem but there are a few drawbacks. Happily the African people themselves are teaching me how to cope with these difficulties.

What are some of the troublesome details encountered with such material as walking frames, crutches, calipers and parallel bars? We have the famous warped joints, the worn out rivets, lost screws and bolts, broken bars, worn out rubber tips, clogged wheels and twisted calipers.

What are we going to do with all these warped joints? They are indeed a nuisance and most annoying because the nicely wedged-in joint with the interior pin makes it impossible to nail them back together again. It splits open. The African has the answer. He will repair these with 'SUSUPORE'. That is a plant that grows about five to six feet high. When the seeds fall, it is cut at the base and placed in water to soak for about a week. The bark rots away and what remains is very fibrous. This fibre is rolled into the desired dimension for the making of rope and used to reinforce the joints. This hemp is really handy to have.

Replacing the worn-out rivets, lost screws and bolts was a daily headache until a villager returned to the mission for the control check-up of his crippled child. He had taken a 'WAA-KEBARE to replace the screw lost by his little one. 'WAA-KEBARE is a very hard thorn found in the flat bush area of the North. The young shepherds use these thorns to sew their straw hats and we now use them to repair and to replace the lost screws and bolts. As for the rivets they usually replace them with 'WAA-KEBARE plus MOUNGAINBURRI. Where do we get this? Well, where we are there are very small bees. They do not sting as much as the honey bees. They make their hive near a termite hill about three feet deep into the ground. It is in this hole that we will find a dry black crust – the walls of the hive. The thickness at the opening of the hole is about one-half centimetre and the middle and at the base of the hive about one-quarter centimetre. This dry black shell is broken into pieces and when moistened makes a fine glue called MOUNGAINBURRI.

For the repairing of the wooden bars of the crutches and of the parallel bars they use the SUSUPORE, 'WAA-KEBARE and MOUNGAINBURRI plus an inner lining, a sort of gum filler, to prevent

further cracking. This stuffing contains manure, not such a hygienic measure, so an agreement has been made to use feathers. I find this more refined and poetical!

Renewing the worn out rubber tips that cover the base of the walking frames and crutches we have a variety of suction tips – old rubber tubing from discarded tyres, the salvaging of rubber heels from the European shoes, and the plastic ones from the more well-to-do villager. The last finding was an empty bullet cartridge. The teenager said, 'This is super, it protects the tip during the rainy season, it doesn't rot'.

If you are not tired and can still bear with me, I'll brief you on our whirlpool therapy. Bath tubs do not exist at the mission. But you are indeed familiar with the 100 litre drums used to store up petroleum. We had these cut in half by the village blacksmith. These were later improved thanks to a fire at the cotton firm. The silos were badly damaged and the director was willing to give the salvaged iron sheeting for the handicapped. The workers themselves soldered the pieces together and we have all of five large tubs for bathing. But for the regulating of the whirlpool current, that was more complicated. After checking on the different handicapped I placed in the same tub a phlegmatic child with a more active one and coaxed him along to splash in the water as much as he can until the water whirls around. As for the temperature, that's not a problem; you simply drag the tub out into the sun, depending on the desired one. If you want a cool bath you'll have the parents pull the tub out when the people usually give drinks to the horses. If you want a warmer bath it's when the sun is overhead about noon-time and for a real hot one, that takes place when the heat strikes your cheek about mid-afternoon. Remember the maximum heat is 117°F. So you can imagine that an iron tub with water can be real hot.

And now for the after bath lotion and massage. It takes a few days to have the tots nice and clean. Many have been neglected and crawling on all fours they do have sores, skin infection and scabies. After soaking the children in plain hot water we obtain a natural fuzzy ring and foam around the tub, and that's our first location. After a few days the skin becomes really clean, soft and bright. Then we use the native peanut oil for the massage. The parents are taught to bathe, massage and exercise their own child. All live in at the mission about fifteen to twenty families at a time. We have no special housing for them because the rehabilitation is all done during the dry season, when everybody lives and sleeps outdoors. When it is too hot to work we withdraw under straw shelters for protection.

How many are we to do this type of work? We are two. I have Ezane, an African young man who is Jack-of-all-trades, and myself. He knows five languages. He is a treasure. The parents do everything under our supervision. We work from early morning till noon and stop for about three hours. During this free period the mothers cook the native food for the family and take a siesta. About four o'clock, when the goats return home, we start all over again with the baths, massages and walking exercises. This is a seven-day-a-week ordeal. At nightfall we all retire on the mats to rest and to talk over the village gossip.

DISCUSSION

SISTER CECILE summarized her paper, insisting on the vital importance of realizing that one must be accepted by the Animists before attempting to help them. It was a waste of time and money to do anything until they were prepared to take help. This meant that the patient was often not brought

to them until four or five years after the onset of the illness, the mission, though now accepted, only being so as a last resort. She agreed that it was necessary to work in with the local medicine man but there again they had to wait for him to approach them. She described her main goal as getting the outcast children who could only move on all fours back on to their feet. Commenting on the use of massage described in the report, MISS S. LEVITT suggested that as the time available for treatment was short (only half the year, as the families returned home during the rainy season) the massage should be omitted and the children put on crutches at once. She agreed with Sister Cecile that the 'parental touch' was important — the parents being taught how to massage and exercise their own children — but still thought the massage might be omitted. SISTER CECILE maintained that everything helped and that they must take every measure open to them. In reply to MR BRAND, who asked from what direction they looked for help, SISTER CECILE said the greatest help would be to have more nurses but these would first have to learn the language and gain acceptance. There was no immunization programme because no vaccine was available; it would in any case need three to four years' preparatory education before being introduced. DR SLATER (Research Group Division of Strengthening of Health Services, International Labour Organization) intervened to point out that this was by no means a relatively easy problem owing to the difficulty of maintaining the doses at the correct temperature. DR WERNER said when the Mexican Government had tried to carry out an immunization programme with the help of the army only about 15 per cent of the population were reached. Subsequently, immunization was carried out with the help of the traditional healers and there had now been no cases of polio for eight years.

INDIGENOUSLY DEvised SPLINTS AND ADAPTATIONS TO SUIT THE LOCAL ENVIRONMENT AND NEEDS

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DR RAMA RAO said he brought greetings and thanks from the Indian Minister of Health to the Symposium. Rehabilitation had been begun in India by UNICEF but there was a great difference between the situation and needs of the towns and the rural areas. The former produced trained para-medical personnel and technicians but full use was not made of them. The country centres had been questioned and it appeared that one of the difficulties with the standard prostheses was that they made it difficult to squat on the ground, as also the removal of shoes in the house and the washing of feet. Madras was now producing a rubber foot. In his opinion, the best method was to find out from the villagers themselves what they wanted and what they had been able to make for themselves and then to develop their work, keeping the cost to a minimum. There should be centres where simple appliances were used. DR RAMA RAO instanced the use of rubber tubing to make splints for hands and fingers. In reply to a question, he said that almost every state now had one or more centres for making appliances and, in answer to further questions, that many suggestions were received from the patients themselves including some from women as to devices that could be used in the home. Facilities existed for training women in the use of such aids and also for placing rehabilitated disabled persons in employment.

ARTIFICIAL AIDS FOR THE MASSES IN THE DEVELOPING COUNTRIES

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India is, after China, the second largest developing country in the world with a population of over six hundred million people. A little over 80 per cent of the population lives in villages where reliable statistics are difficult to come by. This is one reason why estimates of the physically handicapped vary from 13 million to 60 million. Be that as it may, it is estimated that as the population increases by about 13 million a year, 0.13 million are added to the number of disabled every year.

According to statistics worked out by Dr Usha Bhatt, 0.58 per cent of the total population of India requires artificial aids. This works out to approximately 3.5 million people. And this figure does not include 3.2 million leprosy patients who are in need of some kind of orthotic aids. Also it does not include the increasing number of paraplegics, hemiplegics and amputees, etc., whose number is increasing steadily, in view of the rising incidence of cerebrovascular accidents and those of mechanical nature such as industrial, agricultural and vehicular. Therefore, on a rough calculation, approximately 1 per cent of the population can be said to be in need of artificial aids. International estimates place the number of such people around 6.7 million.

The provision of aids to such a large number of disabled persons presents a colossal problem. In ideal situations, we would need one centre per one million population, i.e., 600 centres and over today, and thirteen more every year. This is clearly beyond our resources in terms of both money and trained personnel.

The available facilities are grossly inadequate in urban areas and they are practically non-existent in rural areas. The existing centres manage to cover only 15 per cent of the population, though the staff stretch themselves to the limit. In order to make artificial aids available to the maximum number of the disabled without appreciably increasing the cost, it is imperative that the established centres should undertake research in the development of aids. These should be cheap, they should be of indigenous material and they should be simple enough to be fabricated by local carpenters and blacksmiths.

Since the way of life, the facilities available at home and the job opportunities in India are different from those in developed countries, the standard equipment used in western countries are not always suitable for Indian patients, especially the villagers.

It is necessary to get a clear picture of conditions of living in the villages: small house, low roofs, narrow doors and limited floor space. A standard wheelchair is not ideal for mobility in these con-

ditions. The Department of Rehabilitation of All India Institute of Medical Sciences, New Delhi, has made use of a simple and cheap device for mobility inside the house. It is a wooden plank, mounted on four casters. It is being used by cerebral palsied, paraplegics and bilateral amputees. A modified version of this is being used successfully at the paraplegic centre in Vellore for mobility inside as well as outside the house.

An average Indian squats in situations where his counterpart in a developed country is 'chair borne'. He squats for relaxation, to perform some of the activities of daily life and to carry on his occupation. Affluence and modernization will definitely change much but certain customs and habits will survive. The rich and the poor alike in India will continue to squat at certain social and religious functions.

Keeping this problem in view, our department has devised a simple adaptation for handicapped children, which I wish to show to you. It is an adapted sitting seat with a table (chowki and pattra). This is designed for those children who are unable to sit independently, particularly the cerebral palsy cases, who require special sitting arrangements for developing their functional capacity of upper and lower limbs. The cost of this is within the reach of the majority of patients seeking rehabilitation services. Another simple adaptation is the folding commode seat which has been developed for hemiplegic and paraplegic patients. This simple folding arrangement can be hooked back after the patient has used it, if other members of the family did not like to use a commode.

A rural lower leg amputee in India does not by and large accept a prosthesis because it does not allow him to walk on an uneven surface and slushy roads during the rainy season or to squat. We have tried to overcome this problem by fitting the rural above-knee amputees with A.K. pylons with a knee mechanism and a SACH foot. While walking he locks the knee and while sitting he unlocks it. The Artificial Limb Centre, Madras, has solved this problem by modifying the thigh segments of the A.K. prosthesis. In this the thigh segment consists of two separate pieces – one upper and the other lower – with a turntable in between the two, approximately 7.5 cm above the knee joint axis.

Barefoot walking is prevalent among large sections of the Indian society, especially in homes. One cannot enter the prayer room and the kitchen with footwear on, nor can one enter a place of worship, which is part of most people's lives, with the footwear. Presently, shoes are an integral part of all standard lower limb prostheses. Therefore an alternative to this was found, so that wearing shoes was not an absolute necessity and many amputees, especially females, were encouraged to wear a prosthesis.

In the beginning peg legs were given to those patients who did not wear shoes. Then we developed a compromise between the peg and the regular SACH which was named 'bare foot SACH'. This consists of a wooden heel, a heel cushion of rubber and the bottom lined with tyre ply. This problem was also solved by replacing the SACH foot by a rubber foot not only in our centre but also at Madras and Jaipur centres.

The fitting of an upper-limb prosthesis posed two main problems. One was the exorbitant cost of the prosthesis, because the joints and hand devices had to be imported and the other was an average Indian's preference for a cosmetic rather than a function hand, and a simple inexpensive elbow joint for upper extremity prostheses were developed. These are serving the upper extremity amputees very well, especially the sedentary and female amputees.

An aluminium made hanger has been utilized by us to fabricate light hand splints like cockup and abduction splints, etc. The price of the hanger works out to be three pennies and the total cost of the splint comes to ten pennies. This can be fabricated by any local artisan with some guidance.

All this should underline the need for developing countries to undertake research in their established centres in designing and developing aids to suit the needs of the community. Wherever possible, modern technology should be modified to suit local needs and local talent. In order that the benefits reach the people, the aids thus developed should be produced on a mass scale by utilizing indigenous materials and sold cheap.

DISCUSSION

Summarizing his report, DR S. K. VARMA said the essential points to bear in mind were the size of India's population, the consequent shortage of adequate rehabilitation facilities for the disabled, whose numbers were variously estimated as somewhere between 13 and 60 million, with a probable increase of some 0.13 million a year, and the lack of funds and trained personnel. What they were aiming at was the production of different kinds of rehabilitation equipment that could be made from cheap indigenous materials by local carpenters and blacksmiths and that were in conformity with local life patterns. Such equipment was successful in 90 per cent of cases and it had been found possible to train many of the local villagers to a high degree of technical skill of a simple kind within three to four months. As Dr Rama Rao has said, patients also made useful suggestions and one had invented a plank on casters that replaced the standard wheelchair which could not be used in the small village houses. This was now being produced in large quantities.

THE CHAIRMAN said what was chiefly lacking in India was not technology but money and thought that 'do-it-yourself' techniques should be encouraged as much as possible. What was needed was practical results. After MISS LEVITT had commented that 'do-it-yourself' was not only a good way of saving money but of value to the helpers involved as well, THE CHAIRMAN gave a warning against allowing it to lead to what he called the constant re-invention of the wheel. It was an economic problem with which they were confronted and he hoped that the present speakers would be given the resources to enable them to carry out their present 'do-it-yourself' techniques increasingly satisfactorily. DR VARMA agreed with this and MISS LEVITT remarked that there were large areas in which advanced technology was not necessary. DR AROLE emphasized that the problem needed to be broken down to the smallest village unit.

RELEVANT TECHNOLOGY APPLIED TO A DISABLED WORKSHOP IN NIGERIA

S. W. EAVES

Integrated Education Project, Nigeria.

Summarizing his report, which had not been distributed beforehand, MR EAVES said the key word was 'relevant': relevant to the situation in the developing country in question and to the immediate needs of its inhabitants. Relevant technology might be described as filling the gap between

primitive and sophisticated technology, using the materials that were available locally and techniques that could be taught to primary school leavers with no prior technical training or qualifications. The training provided under his Project included subjects as various as simple costing, home economics, first-aid, etc., but the film he showed was of the workshop for the disabled where a number of different types of goods for sale were produced. The techniques used and taught might sometimes be unorthodox but they worked. There were pictures of educational toys which were now selling successfully in shops in the Nigerian state capitals, school furniture, lampshades, etc., as well as helps for the disabled such as crutches and wheelchairs of which they had now developed eight different types. The materials used were largely scrap collected from builders' yards in the town, old motor-car tyres and inner tubes, etc., so that reliance on imported goods or materials was reduced to a minimum. The programme as a whole was directed to school leavers with no special skills who would otherwise be unemployed, but also included the training of beggars and disabled people needing rehabilitation. One of the supervisors of the disabled workshop had himself been a beggar. The disabled trainees were encouraged to develop their own inventive powers and some of the types of wheelchair, for example, had been designed and made by the disabled themselves. In reply to a question about the criteria for admission to the trainee workshop, MR EAVES explained that, so far as the able-bodied were concerned, he notified the local authorities of the places available and they then made a selection from the Standard VI or VII primary school leavers not qualified for employment – what he described as the school 'drop-outs'. As for the disabled, some he came across himself in the towns or villages and others were brought or came of their own accord.

In reply to further questions, MR EAVES said the first Intermediary Technology Workshop had been set up by himself at Zaria in 1970 after the civil war. As the local authorities showed no interest in the project he had made a number of articles himself from scrap material and shown them to the Governor with the result that he had obtained a £2,000 grant and the use of a bungalow. There had been no more grants for the next few years but the government had produced work in the shape of orders for equipment for its new health clinics. The project was now being subsidized by the Dutch Bernard van Leer Foundation and government financial help was expanding. It was now very nearly self-supporting, 90 per cent of its expenditure being covered, except for his own salary, by the sale of its products. There were now two Relevant Technology Workshops, in Jenta and Pankshin, supervised by former trainees of the Zaria Workshops.

Asked by the Chairman about the integration aspect of the project, MR EAVES said the aim was to equip the disabled to return home capable of earning their own living and playing a full part in the life of the community. They were encouraged to go home after about a year's training and, if possible, set up their own small business or workshop for which the village chief usually provided a hut. So far, four projects had been started in this way in villages. The project also helped widows who had been left destitute and a new workshop had been set up on the river in one village run entirely by women and mostly occupied in welding. A start was being made in the rural areas by organizing classes in various subjects to be taught by experts (bank clerks, nurses, members of local authorities, etc.). The workshops also made farm equipment and arrangements were made to visit the farms to check that their products were efficient and of value, besides inviting the farmers to visit the workshops and make suggestions. Integration of the disabled was made easier by the fact that there was no prejudice against them, such as existed in some other places.

THE CHAIRMAN said Mr Eaves's film and his explanations had made it plain that practical measures to help the disabled were what had to be encouraged.

Tuesday, September 28th.

On the second and subsequent days of the Symposium, Mr Donald V. Wilson took the Chair.

After MR GUTHRIE had appealed for practical recommendations from members of the Symposium, THE CHAIRMAN said the emphasis should be on the specific equipment and services needing to be delivered. Appropriate technology could not be considered in isolation from the necessary equipment. The present discussion was to centre on delivery.

HEALTH CARE DELIVERY FOR THE DISABLED

PROFESSOR J. S. R. GOLDING, C.D., O.B.E., M.A., F.R.C.S., F.A.C.S.

Department of Orthopaedic Surgery, University Hospital, Kingston, Jamaica, W.I.

In recent years events in the world at large have changed the whole structure of thinking in developing countries. This has resulted in a rate of change in the society which is proving to be almost too stimulating and very often most difficult to understand. Two million people is few enough to allow one to get to know personally many of those directing the activities of the country. In this way I have had every opportunity to appreciate the problems and how they are being tackled. It has become very obvious that developing countries like Jamaica have a very deep unease. Until we can understand the origin of this, we cannot get to grips with the care of our disabled people. Our plans and programmes have no chance of success unless they are in keeping with the main thrust of thinking in our countries.

This feeling of unease and a deep dissatisfaction with the *status quo* appears to be common to many diverse areas. In the journal *Contact*, writer after writer from different countries have expressed this view. Dr Dorothea Sich writing from Korea, Dr Luke Hendrats in Java, Dr Carroll Behrhorst in Guatemala and Dr Samuel L. Pamar from Uttar Pradesh in India, have all written articles on different aspects of 'Health Care, Medical Education and Medical Organizations'.

The article written by Dr Pamar titled 'Health Care in the Context of Self Reliant Development' should be obligatory reading for anyone working in a developing country. Dr Pamar sums up the situation we have to face.

'The basic criterion to judge the validity of an institution is to ask if it is meeting the needs of the society. A medical college or a big hospital has full justification to continue if it serves the less privileged sections of society. But, if it trains young doctors to add to the army of expatriates looking for greener pastures in rich nations, or if the services provided by the hospital are so expensive as to exclude the poor, then it loses the justification for its existence. The same kind of criteria should be applied to the so-called experimental projects or their evaluation. Do they meet the needs of the community? Do they promote self-reliant development?'

Self-reliant development has four constituent elements:

1. To start from the realities of a given situation.
2. To develop and determine priorities in terms of needs and resources.
3. To embark on sustained efforts to mobilize available and potential resources *within* the society.
4. To consider foreign economic links in terms of whether they really serve national priorities.

From the point of view of the disabled there is an absolute need to understand and define the realities of the situation in which they find themselves. The developing countries are generally poor, yet in practice there are in each a group of rich people who have a concentration of political and economical power in their hands. Even in the 'oil-rich' developing countries this situation exists. It is true to say that poverty and the factors that cause it remain the basic reality. When the poor were confident in the fairness, consideration and interest of the governing rich, then the society was stable and in a sense 'happy'. For most of the world, these halcyon days are over and we have to realize this. In order to produce a self-reliant society, the poor majority have to develop the confidence in themselves that says and believes and sets about 'pulling themselves up by their bootstraps'. A situation clearly understood by Governor Luis Monros-Marin of Puerto Rico twenty-five years ago.

As Dr Pamar puts it 'Developing countries will be doomed to psychological subservience and feelings of inferiority if they apply imitative norms of rich countries to judge what contributes to national self-respect'.

At this point I would like to speak about the overwhelming effect that a foreign culture has in a developing country. Dr Chigier in Israel once wrote 'Culture is like the wind. We cannot see it but we know its effect when we see the strong tree bend before it.' Every expatriate carries the culture he learnt in childhood with him and too often has a basic contempt for any other. I often wonder if the best thing for a developing country would be to remove all those nationals and expatriates who spent most or all the first twenty years of their life in a different culture. The supercilious attitude of the Jamaican nurse trained in England when she returns home is the rule, not the exception. I am coming to believe that a developing country with a university and unrestricted access to books and journals would be better off in this developing period of 'Operation Boot-Strap' with no foreign trained nationals or expatriates at all. Self-reliance and national pride would develop in such a country.

I was very distressed by the views of some of my orthopaedic surgical colleagues meeting here in Oriel College some three years ago. They wanted help to perfect techniques and bring their training standards up to that of the most affluent society. I think this is basically wrong thinking. Our problem is to bring a reasonable standard of care to everyone. Anywhere that the standard of care given to the rich differs markedly from that given to the majority is piling up trouble for itself. It is not building a self-reliant society, and I believe, has the seeds of self-destruction well planted. The worst group of people for such a developing society is the well intentioned muddlers. We must make absolutely certain we are not amongst these ourselves.

Our first job is to analyse the size of the problems as far as the disabled are concerned. We must train suitable nurses or paramedicals to record the number of disabled in their area. To do this they have first to recognize the presence of disease in the very young. It is, for instance, surprisingly difficult to recognize if a young child is deaf or not. The child should then be referred to the appropriate clinic. A record card should be made so that the Central Clinic can start a statistical record and follow up these cases. Once it is clearly understood that a good central record system of the disabled, particularly children, is essential for any programme, then the parents, nurses, doctors and teachers who are responsible for the disabled children in their area will make sure their disabled are recorded. We thus learn the extent of the problems we have to face and prevent children being forgotten during these vital years.

Our second job is to establish priorities as far as the disabled are concerned. These priorities must be related to society's attitudes and needs; they must be clearly thought out and be clearly stated. Basically the developing country has a shortage of middle management and skilled artisans. This is an ideal situation for the disabled because their disability tends to prevent them competing as unskilled labourers. In the developing society, the disabled can be trained effectively, for many skills and jobs can be found for them. We have concentrated on instrument, speedometer and telephone repairs, jewellery, woodcraft, sewing, embroidery and laboratory techniques. In all these trades the disabled find a most useful role to play. My feeling is to concentrate on those disabled who can readily find employment. Building up facilities for them is economically sound and can be readily and cheaply expanded to include others. The deaf, blind and physically disabled should be useful members of society and will be if their condition is recognized early and education started appropriately. The mentally disturbed respond well to vocational training and will work well in suitable sheltered workshops.

Although good medical care obviously plays an essential part in the total care of these children it should be considered as of secondary importance to education. Our aim is to produce a useful contributing adult. The very severely disabled and the severely mentally retarded are of lesser social importance in a developing society (although personally of equal importance). Where funds are limited those who can pay their way once they are trained must have priority. As affluence increases, then these lesser priority conditions should be considered more deeply. One must not forget that many families become insolvent because of the presence of a severely disabled or retarded child preventing a wage earner from working. This situation needs custodial care subsidized by the parent who is released for work by removing the child from twenty-four-hour family care.

If our meeting can come up with guiding principles and resolutions it will have achieved a great deal. Perhaps I may be allowed to suggest certain areas for discussion as follows:

1. Concentrate on children who past experience has shown are likely to become readily employable.
2. Social Welfare Training and Education takes precedence over medical considerations.
3. Analysis of the cause of disability will show several areas where preventative measures will be applicable including rubella, polio, leprosy and often kernicterus.
4. Eventually genetic counselling will be needed to eradicate conditions known to be inherited as a recessive characteristic or a serious dominant problem which might need sterilization.

This paper has been based on a simple thesis which I believe to be true. It is that the problem facing those of us who have spent our lives working in developing countries is not to bring new techniques to our communities but to bring what we know and have available to those who need them early before unnecessary structural changes have time to develop.

As an orthopaedic surgeon, I know that the job of the doctor in a small community hospital is to decide whether a patient admitted with a severe injury should be immediately transferred to a major centre or not. The person who does primary care of the injured determines the whole future course and outcome of the condition. Nothing done by the most expert after bad primary care can make up for this. We must, therefore, be sure that whoever sees these patients has the experience and knowledge to decide whether immediate transfer is necessary. In a country as small as mine it is no problem to put the disabled into some form of transport and move them following injury. They can get to a major centre within six hours and this allows good primary care. This does not only apply to trauma. I learnt from my father who was a general practitioner that his job, when

presented with somebody with abdominal pain, was to decide whether he was dealing with an acute abdomen or not. It is the job of the hospital to make the diagnosis; it is the job of the primary health care member to sort out which patient needs further treatment and see that he gets it immediately.

As far as the care of the disabled is concerned it is our aim to recognize potential disability early and start treatment before deformity has become established.

Professor Sandy Brown, the first Professor of Medicine at Ibadan University, used to say that prevention is not only better than cure, it is far, far cheaper. The management of a disabled child is extremely costly in every way – education, vocational training, speech therapy, bracing, physical therapy, medical care, nursing care, surgery. Every preventive effort must be made and to do this a proper knowledge of our country's problem is the first step. Early recognition of the individual case, the second. A clear policy concerning priorities is the third and maybe the most important of the lot. Our aim has to be to prevent these conditions developing at all.

DISCUSSION

Both in his report and in his address to the meeting, **PROFESSOR GOLDING** insisted on the need in the developing countries for what had been described as 'self-reliant development'. This involved taking the situation as it was in reality and assessing it in terms of the size of the problem and the numbers involved and, in the light of that assessment, determining priorities in respect of needs and resources. A sustained effort must then be made to mobilize all available and potential resources and it was remarkable how much goodwill was then found to be available and how much enthusiasm could be engendered. This must be done *inside* the country or community. Foreign economic links which, in any case, should come last on the list, could be positively demoralizing for the inhabitants who were necessarily prisoners of their own pasts in that they had been accustomed to a more or less paternalistic type of government. They had to learn to rely on themselves and their own efforts, and the introduction from more developed countries of sophisticated rehabilitation methods, aids and equipment, which most of them could not afford, was more of a hindrance than a help. Jamaica had developed considerably over the past twenty years but her aspirations were ahead of her resources and all engaged in rehabilitation had to learn to adapt to what the people could take in, appreciate and use. In such a situation, advanced technology was not necessarily the best answer. Research was, of course, of the greatest importance but less so for workers in the developing countries where doctors and nurses who had trained abroad had to learn to make use of what was at hand and to do without the numerous facilities so readily available in western teaching hospitals. In the past, medicine had been regarded as a subject on its own; but nowadays it should be thought of as part of a larger field, that of the social sciences as a whole, with medical students being encouraged to become 'community-minded' from the start. At present they were taught nothing about the whole field of rehabilitation but that also could be remedied by this changed attitude towards medicine.

Jamaica was small enough to allow of personal contacts between the government and the medical profession which made official help easier to obtain. If the government felt it was trusted by the doctors it would try to help them. If the doctors could demonstrate the success of their methods by pointing to specific cases, then further help would be forthcoming. The best way

to begin was by training nurses and paramedical helpers to identify and record the numbers and types of disabled in each area, with a central clinic to follow up the cases.

Training disabled children or adults to become self-reliant meant establishing priorities which, in Professor Golding's opinion, must be related to society's needs. In a developing country which usually had a shortage of middle management and skilled artisans there were plenty of jobs for which disabled persons could be trained and he felt that rehabilitation should concentrate on such of the disabled as would readily be able to find employment. So far as children were concerned, if the aim was to produce adults capable of making a useful contribution to the community, good medical care must take second place to education. Schooling, that was to say, should take precedence over surgery. In due course, as more funds became available, it might be possible to extend treatment to those who would never be able to earn their own living, or only to a limited extent, but to his mind those capable of doing so must be given priority.

Reverting to the question of new techniques, PROFESSOR GOLDING said the task of those engaged in rehabilitation must be to bring what they knew and had available to those who needed it, never allowing themselves – still less, their patients – to feel that because better equipment or techniques existed elsewhere it was no use trying what could be done with those they had. A difficulty met with by expatriates in a developing country, as also by some of its own nationals who had been educated or trained abroad, was the conscious effort required to identify with that country and become accepted (or re-accepted) as a member of it, without adopting a contemptuous attitude towards some of its apparent shortcomings. International organizations sometimes offered quite inappropriate aid because they were never able to penetrate beneath the surface. Different countries were at different stages of development and the object must always be to make the people they were dealing with proud of being what they were because of what they had achieved.

Lastly, it had been said that prevention was not only better than cure but also far, far cheaper. That was certainly true of developing countries, though not always of developed ones. Its achievement called for knowledge of the problem in the country, early recognition of individual cases and a clear policy with regard to priorities.

THE CRAWLING POLIOMYELITIS CRIPPLE AND HIS MANAGEMENT IN AN ISOLATED ISLAND GROUP IN THE SOUTH-WEST PACIFIC

A. B. CROSS, O.B.E., M.D., F.R.C.S.I.

Formerly Government Surgeon, British Solomon Islands Protectorate

DR CROSS said it was sometimes asked whether crawlers could be rehabilitated; if so, whether it was justifiable, by what methods it could best be done and what types of case were suitable. A survey carried out in the Solomon Islands in 1970 had revealed 222 cases, mostly due to the 1947 and 1951 polio epidemics and therefore adults. There were six patterns: (i) squatting (48 per cent); (ii) infant-like posture (30 per cent); (iii) quadruped (6 per cent); (iv) pivoting on the buttocks (11 per cent); (v) body dragging (3 per cent); (vi) minimal movement only (2 per cent). With certain exceptions for 'social' reasons – persons living on mountains, for instance, or where there were psychological reasons against intervention – he felt that some attempt at rehabilitation ought definitely to be made. The provision of a wheelchair was sometimes enough and twenty-nine had been given

out to patients who could not be rendered capable of using crutches and who wanted help. He had carried out the following operations:

Multiple division ilio/tibiac band	176
Psoas tenotomy	7
Open biceps tenotomy	98
Supracondylar osteotomy of femur	34
Arthrodesis knee	6
Subcutaneous elongation of tendo Achillis	91
Manipulated limbs	81

In the majority of cases the patients had been fully rehabilitated to walking with crutches. He classified the results as: Excellent (=walks 1 km without difficulty); Good (=walks $\frac{1}{2}$ km more slowly without difficulty); Poor (=able to walk upright); Failure (=remains or reverts to crawling).

Early results (i.e., fairly soon after the operation) were as follows:

	<i>Excellent</i>	<i>Good</i>	<i>Poor</i>	<i>Failure</i>
No surgery (7)	5	2	—	—
Single leg (22)	18	1	3	—
Both legs (91)	56	26	4	5 (1+)

Later results:

	<i>Excellent</i>	<i>Good</i>	<i>Poor</i>	<i>Failure</i>
No surgery (7)	5	2	—	—
Single leg (22)	16	1	2	3
Both legs (91)	50	23	2	16 (3+)

Care must be given to the selection of patients for treatment. It was necessary that they should have the will to improve their condition, coupled with strength and endurance. After the operation they had to learn to use their new appliances and this was not always easy; there was also considerable psychological adjustment to be made. The work of the physiotherapist at this stage was essential as there was much muscle atrophy to be dealt with and infinite time and patience were needed. There also had to be a careful follow-up after the patient was discharged.

Surgery should be kept as simple as possible but the angles of deformity must be eliminated. The operation on the Achilles tendon never failed; operations on the hip were largely successful and it was the knee that presented most difficulties. If operations did not succeed there remained manipulation which must be very gentle and gradual. Complications sometimes followed operations. He himself had had 5 cases of crutch palsy, 21 cases of painful knees, 5 cases of painful ankles (following manipulation), 2 cases of fractures due to falls, 1 case of head injury and 19 cases of plaster sores. These were in part due to the lack of sophisticated nursing staff.

The appliances used were calipers, crutches and wheelchairs. For their manufacture they used local woods, rubber tyres, metal from reinforced concrete scrap (and later imported metal), leather which had to be imported and plastic. Wheelchairs were more of a problem, not so much because of the materials required — motorcycle wheels were found very useful — but because of the primitive roads. They were handed out only to very carefully selected patients and remained the property of the philanthropic society formed locally which helped to pay for the necessary appliances. They were handed back to the society when no longer needed.

The same society also arranged outings for disabled persons from remote villages which helped considerably in their psychological rehabilitation which was as important as the physical. To have been on one of these outings, besides providing an opportunity of seeing something of the larger world – by a visit to the local airfield, for example – also gave the disabled person a certain status in his own community.

DR CROSS thought a locally-based philanthropic society, formed of local people, was a vital element in rehabilitation. The one he had referred to was known as 'The Society for the Crippled People of the Solomon Islands' and was doing invaluable work.

Following a successful immunization campaign, there had been no known cases of polio in the Solomon Islands since 1965. When it did occur, it was essential at all costs to avoid contractures.

DISCUSSION

In the discussion of both the preceding papers, PROFESSOR GOLDING expressed the view that rehabilitation consisted of far more than the mere restoration of the patient to an upright position. So far as cases of child polio were concerned, he disagreed with what Dr Cross had said about contractures, handling of the limbs in the early stages being frequently extremely painful. He warmly supported the notion of local philanthropical societies but added that, while often easy enough to set up, they required constant effort to keep them going. This was best done by initiating a series of on-going projects and he instanced the Jamaican society which ran an amusement park and used the proceeds to establish on-going schemes that fulfilled local needs, kept interest alive and contributed towards the society's funds.

DR ABDUL RAHEM AHMED said there were two standards of medical care: private practice and a national health scheme. While the actual medical and nursing care were the same in both, if more sophisticated aids existed people would pay to have them if they were available locally or, if not, go abroad. Why, then, should they not be produced locally? So far as stimulating self-reliance in a developing country was concerned, he thought it a good thing for people who knew what local conditions in their own country were like to go abroad for training and see what could be done elsewhere, provided they were mature individuals who would return to their homes subsequently. Replying, PROFESSOR GOLDING said that, in countries where it was accepted that there were two standards of medical care, it was bound to take time to change the situation which formed part of the cultural background. The way towards change was through re-orientation of medical courses. With regard to prostheses, the unfortunate fact that had to be faced was that beggars *were* in fact choosers and that most patients would rather have nothing than an obviously second-rate aid. If more sophisticated ones were imported or manufactured locally the poorer patients who could not afford to buy them would not allow themselves to be rehabilitated with the help of much simpler aids which were perfectly satisfactory from a practical point of view and, indeed, sometimes more functional than cosmetic ones. Such patients must not be allowed to think of themselves as second-class citizens, more especially as this encouraged them to lock themselves away from the rest of the community. He had not meant to deprecate all visits abroad by nationals of developing countries but only the sending of medical students to train in foreign hospitals; visits to hospitals and other medical institutions by mature doctors and other responsible members of the medical or nursing professions could only do good.

In reply to a question, **DR CROSS** said that older patients, far from finding it more difficult to learn to use walking appliances, adapted to them easily provided they were of a simple nature and hence less likely to go wrong than more sophisticated types.

MR CARTER-JONES, referring to the need to establish correct priorities, said he had recently returned from the West Indies where he had been shown over a new hospital on one of the smaller islands. It was superbly equipped but far too advanced for the needs of the area. The same island had no school and a request recently put forward for £60,000 to build one had had to be refused for lack of funds.

DR GARST put in a strong plea for patients being made to subscribe towards the cost of their treatment and thought it a great mistake not to do this. There were no patients who could not contribute something. This was one way of developing a sense of responsibility. While not disagreeing, **THE CHAIRMAN** thought it was also a good thing to generate help from inside the community generally.

HELPING THE HANDICAPPED CHILD AT VILLAGE LEVEL

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I would like to draw attention to three facts and discuss some ideas for helping the handicapped child in relation to these facts. Two of these facts are well-known and well-documented and the third may not be as familiar to professional workers in the rehabilitation of adults and to some rehabilitating handicapped children.

Firstly; in almost every clinic for handicapped children the staff can pick out two or more children who have the same diagnosis and intelligence, yet one child is progressing far more – and I mean ‘far more’ than the others. This progress can be directly connected with the fact that that child has a better home environment than the child who is not progressing as well.

Secondly; we know that in populations of normal children, those who come from homes which given them good food and a stimulating environment will develop better than those who come from homes where there are social and economic problems. Dr Morley drew my attention to the research study in Cali Columbia which reveals that good medical care and correct food were not enough to promote adequate growth and development in children from slum areas. These children also required a good stimulating environment.

A good home is not only one that offers adequate care and food. I have just been advising a wealthy family with a handicapped child in Italy: their handicapped child is, in important ways, as deprived as some of the children I saw in the poor families in Sicily. There was severe deprivation due to lack of correct stimulation of the wealthy handicapped child – too many servants and loving family doing everything for the child. This is equal to doing *nothing* for the child as far as obtaining her development or progress.

Thirdly; all handicapped children are retarded in their development. It is obvious that a physical handicap affecting nerves, muscles and joints, or blindness, deafness and other physical defects

affects the child's development in the specific area of the handicap. What should, however, be recognized is that one area of development influences other areas of development. If a child cannot move, he cannot explore his world and find out many fundamental things. He cannot experience various sensations of, say, temperature, texture, distance, size and many space perceptions. In addition, he cannot understand the meaning of such words as *far, near, fast, slow, up, down, around, inside, outside* and numerous others. Lack of exploration through movement interferes with his perceptual development and with development of speech and language and even mental development. His emotional and social development is restricted as he cannot run up to join a group of friends nor perhaps fling his arms around his mother or push away an irritating sister or brother.

If children have been immobile for reasons other than a physical handicap, this immobility also affects the child's development in perception and intellect, speech and language, emotional and social development. One of the great causes of immobility in developing countries is malnutrition. The children are too weak and lethargic to move. Once efforts are made to remedy the malnutrition, efforts must also be made to stimulate all areas of child development as shown particularly in the study in Cali Columbia. How then do we obtain a good home to stimulate the child's total development?

If we know how to achieve this we shall also know how to obtain a community which stimulates the child's total development. In some societies the family or only the mother is responsible for the child's primary development; in others the extended family and the community is expected to contribute. It is best if as many people as possible contribute as the burden is too great for one person or the parents. Of course, extraordinary parents and mothers on their own have been known to cope completely alone with the development of their handicapped child. This is extraordinary and it is appalling that some do not acknowledge this.

There must be various ways in which the participation of the community can be achieved. Perhaps this Conference will make suggestions. My suggestion is that one person in a village should be trained to advise and instruct and publicize how to help the handicapped. Remember that I use the word 'handicapped' meaning not only delay in development due to physical handicap but also due to lack of mobility for reasons such as malnutrition, prolonged stay in hospital, poor housing restricting a child's free activity, ignorance of parents of how and why to stimulate the child and so on. The person responsible for stimulating child development may be the village health worker or the school teacher or someone with a special flair for working with children.

There will always be particular problems and particular children who need more specialized advice. These few children should be seen by specialists at a local centre serving local villages or in the nearest town. Perhaps this specialist can also travel out to the local centres. What do members of this Symposium think? The role of the specialist and his/her local assistants are to advise.

1. What to expect from each child

Too much may be demanded of a handicapped child and this frustrates him. He becomes discouraged and gives up or becomes a behaviour problem. 'Too little' is more often what is expected of the child. He does not progress and often becomes more dependent on others than he needs to be.

In order to know what to expect from a child, we must know his developmental levels and individual developmental pattern. Ideally, this assessment of his developmental levels should be

analysed by developmental paediatricians, psychologists and various therapists and teachers specialized in developmental problems. However, is this an unrealistic ideal in countries with inadequate resources?

Even in countries with advanced facilities, it is impossible to assess EVERY child in this expert way; it is, however, possible to obtain a *rough* estimate of a child's motor, fine motor, perceptual and intellectual levels as well as social and emotional levels, so that work can begin. We still have to work out relevant and better general developmental levels as a basis for developmental stimulation in developing countries.

Once again the complicated problems should be seen by specialists in a centre.

It is important to recognize that an understanding of the child's developmental abilities and disabilities becomes more obvious to those who spend a great deal of time with the child. Therefore the observations of the mother, family and friends can be very helpful. Those trained to advise parents must not be allowed to view parents as inferiors at this stage of assessment or at any other stage.

Correct expectations of a handicapped child is not only guided by the developmental levels of that child, but also by the attitudes in the society that surrounds the child. In some cultures handicapped children are considered 'hopeless' and nothing can be expected from them; I believe that these attitudes can be changed. They can be changed if one can find out not only what the children *can* do at their level but HOW TO GET THEM TO DO IT.

2. How to get the child to function

There are a great number of techniques which can be used to stimulate development in mentally handicapped, physically handicapped and other developmentally disabled children. In working with parents I am collecting many techniques that can be carried out by parents whilst others require qualified therapists. It is my hope to carry out a fuller study in depth of methods that can be used by parents and members of the community. My experience so far centres on methods which require instruction by a highly qualified therapist. Once given such instruction parents may be excellent workers. If there is no such therapist available, then we must find those methods which are extremely simple. I have already been looking at this problem and know that it is possible to work this out. In my proposed study, I also hope to clarify which problems can be overcome with some basic methods and which problems require more specialized help.

I shall show some slides to demonstrate methods which can be used by members of the community in various contexts, e.g., in the home, in playgrounds, in schoolrooms and perhaps during special events of a particular village. It would be fascinating to me to visit some villages again in different countries and observe what the handicapped child does during the special events. If there is no part for him, perhaps one could think about this and devise something. At a dance, in Africa, I saw a severely handicapped man playing a musical instrument as part of a music group, whilst others danced. I remember seeing a severe hemiplegic adolescent dancing on one leg and acting as a clown to the great enjoyment of his audience; they adored him. Participation of a handicapped person in the community does not, of course, always mean that his participation is stimulating his development. But his participation *can* be guided so that it also develops his abilities.

You will see in the slides that once the child is helped to function with certain basic methods, the very fact of his active function demonstrates the potential in the child. It is this practical

demonstration of the child's emerging and even existing abilities that has changed the attitudes of many of my parents of handicapped children. So often parents have been told the symptoms of their child's condition, in other words 'what is wrong' with their child, that they do not approach their child in a positive way and their attitude increases the child's handicap.

Attitudes to the child cannot be ignored. In a research study I carried out on cerebral palsied children in an adventure playground with a grant from Action Research, it was shown that the attitudes of the adults directly affected the function of the children. Children did not use some of their motor skills in the playground because the adults did not expect them to use them or did not seem to know how to get them to use them. There were other factors considered in this study but certainly the approach of the adults around children and working with children is crucial as to whether children become more or less handicapped.

We must, therefore, stress rehabilitation programmes at village level. *Aspects* of rehabilitation may still require special rehabilitation centres. However, many aspects do not require this. Unfortunately, advanced countries have gone too far in centralizing *all* aspects of rehabilitation in a big centre. For years, some of my colleagues in big centres have tried to shift the rehabilitation into the homes and community. Community paediatric therapists are a relatively new creation in Britain. Let us not *start* off schemes in developing countries which are too centralized. We must work out and collect existing methods for developing handicapped children which are appropriate to the child's local environment, i.e., to his home and to his village.

DISCUSSION

MISS LEVITT said her experience of working alone in Africa had shown her the value of interdisciplinary training and the need for what she called 'composite' rehabilitation workers. As stated in her report, physical handicaps could not be isolated from a child's mental and social development, all of which must be taken into account. She naturally did not advocate training rehabilitation workers in every discipline but they did need to be given a certain amount of general knowledge of each. What, therefore, were the techniques that such workers could use and what techniques could parents use themselves? The role of the physiotherapist was partly to give treatment that could not be given by an unqualified person, but another and most important part was to teach the mother of a backward or physically handicapped child the simple techniques that she could carry out herself at home. It was important to learn not to do too much to help the child who should be encouraged to do what it could for itself. Mothers could be taught how to turn dressing and feeding into helpful exercises, replacing direct neuro-muscular training or, at least, supplementing it. Children with no neurological defect but whose development had been delayed for various reasons could also be helped in the same way with their speech, recognition of colours, etc. MISS LEVITT used the phrase 'movement in life' to describe this type of treatment which could be so much more useful than mere exercises.

Child development could also be furthered through play, not merely in adventure playgrounds but at home, using various pieces of ordinary furniture. It was important to use the child's own abilities, such as they were, giving him only the minimum help needed to complete the movements aimed at. True rehabilitation did not consist in putting children or adults on their feet, but in teaching them how to get on to them. In any case, it was not only the lower limbs that were affected; control over the trunk and upper limbs was often defective as well.

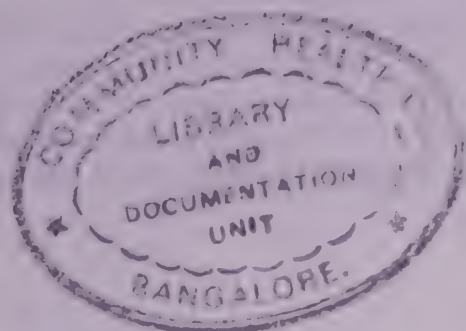
One mistake sometimes made was expecting children to sit on, or use, furniture that was too large for them; if a child was to progress and achieve balance control it must feel sure of itself. For example, a floor seat could be put on castors so that a child could push it along with its feet, if its trunk control was not good enough to enable it to use a platform on wheels. Children should never be tied to their seats; they should be well seated on a chair or stool with a table or other object in front of them to keep them in place. It was also important to get children moving in the right way, or lying in the correct posture, to prevent contractures and deformities.

To a suggestion by **DR VARMA** that a curriculum might be worked out for a combined course including physiotherapy, for workers among developmentally delayed children, **MISS LEVITT** replied that she thought it would be better to show teachers, health workers, etc., aspects of other disciplines which they could use themselves, thus, for instance, extending physiotherapy to overlap with occupational therapy. **MR ERIC VIEL** said he had trained workers in hospital in methods of dealing with, for example, brain-damaged children or polio victims, but they always worked under the supervision of a physio- or occupational therapist. The next problem was how to train the parents, families and other helpers. **THE CHAIRMAN** commented that the problem had two distinct aspects: the type of personnel to be trained and the content of the training given.

In the course of her talk, **MISS LEVITT** showed slides of the methods that could be used in the home, playgrounds, etc., by parents and others once they had been shown how to make the ordinary, daily activities into 'exercises' that would help the child's development. She also showed pictures of special furniture and aids for such children.

MR BRAND deplored the resistance offered by professional organizations to the development of training schemes for those dealing with developmentally delayed children and the harmful results produced. It was sometimes possible to get round this, however, and he mentioned hand surgeons in the United States who worked with physio- and occupational therapists. Treatment must relate directly to the patient's daily activities. It was often suggested that training of those dealing with disabled children should be short and elementary but this was quite wrong. There might be limitations on the use of electronic equipment; there were none on the use of individuals and their intelligence. He had for many years been engaged in India in the fight against leprosy and knew from experience that workers could be trained on the job and were capable of learning, in time, to take on a broad range of responsibilities. This took time but could certainly be done.

DR WERNER said helpers being trained to teach families how to take on the major responsibility for a disabled person must not be 'super-saturated' with over-long training. A start should be made with what each individual could give the families immediately and he could then be given additional training while actually working with them. **MISS LEVITT** thought rehabilitation centres were needed in central urban areas but pointed out that there might be disadvantages as well as advantages in arranging for formal inter-disciplinary training courses. This might end by creating a new profession. She herself would be in favour of training workers on the spot up to the special needs of each given locality.



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APPROPRIATE TECHNOLOGY FOR REHABILITATION IN DEVELOPING COUNTRIES

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Those who have done so much for the rehabilitation of handicapped children in Europe and America are naturally enthusiastic to spread their knowledge and skills to the Third World. This paper will examine some problems of developing countries, and try and relate these to the needs of their handicapped children.

Major Problems of Developing Countries

Rural/urban imbalance

Although three-quarters of the population of most developing countries live in the rural areas, three-quarters of the spending on medical care and three-quarters of the doctors are in urban areas. Three-quarters of deaths are due to conditions that can be prevented at low cost, but three-quarters of the medical budget is spent on expensive curative services.

Not only in medical care but in every aspect of development preference in planning is given to urban areas. It is one of the great injustices of our world that most capital is produced by peasants in rural areas and spent by governments in cities.

Limitation of resources

The second major problem is the limitation of resources. In 1970 it was estimated that the average developing country had about U.S.\$1 per person to spend on health care each year. At that time the industrialized nations were spending around U.S.\$100, and economists believe that at the 1970 value of the dollar, these countries are likely to be spending U.S.\$250-300 at the end of the century, while the developing countries will be spending little more than U.S.\$3. Thus exporting the European type of health service may be irrelevant to the needs of the non-industrial world.

Population structure

The third problem is the different population structure, with developing countries having many more under 15 years of age and a smaller work-force in relation to the dependent population than in industrialized countries.

Development of Health Services

The developing countries invest enormous sums in building teaching hospitals which the present Director-General of the World Health Organization has dubbed 'disease palaces'. These institutions are immensely expensive to build, and running them not only absorbs a quarter, a third, and sometimes half of the total recurrent health budget, but also drains skilled personnel from other services. As described elsewhere (Morley, 1973), the teaching hospital fails to achieve what is ex-

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Figure 1. The 'disease palace' teaches a way of life and gives expectations to the medical student which make him unsuited to work later where he is needed in the rural areas.

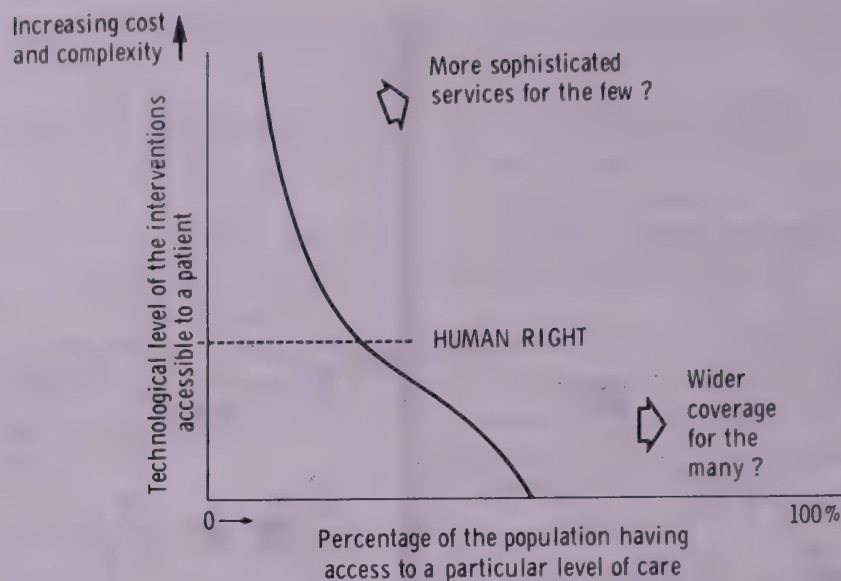
pected of it. The doctors and health workers it produces are unsuited to the needs of the country. It fails to be a referral centre, and the research undertaken in it is often irrelevant. The parents and families of those who succeed in gaining admission to one of the much sought-after places in a medical school look for some return on their investment. However, this return is only likely to be realized if the graduate remains in a town, and capital cities are rapidly becoming over-populated with doctors. They may have more than one doctor for every 500 of their population, while in the rural areas there may be only one doctor for 40,000. This over-population of doctors produces a tendency to specialize.

Specialization

Most city dwellers have left an agricultural economy in the past two generations, and they are still seeking a stable and secure position. In medicine one way of achieving this security is by helping to set up a new speciality and if possible heading a new department, with a monopoly of scarce skills. Some of the *elite* in the city will require these skills, and will be prepared to pay heavily for them. This creates pressures to provide specialized services for the few rather than basic services for all (Fig. 2) (King, 1974).

Rehabilitation as it Exists in Developing Countries

The majority of developing countries have limited services in the capital city for handicapped



The tensions over priorities for the development of health services

Figure 2. In rehabilitation, in keeping with all other aspects of health work, we have to make the choice between helping a few with highly technical services or providing for the many.

children needing rehabilitation. The tendency here, too, is for greater specialization rather than for wider coverage. During the last ten years, another form of rehabilitation has been invented to meet the problem of malnutrition. Cook (1971) showed that malnutrition is poorly managed even in large hospitals, with 10–50 per cent of children dying during admission and between 15 per cent and 35 per cent more dying in the succeeding year. This was not only because of poor management, but also because efforts to teach the mother were inappropriate. Nutrition rehabilitation centres are specially designed to show the mother how she can cure her child by feeding him. Cook showed that here the case fatality is low, and the cost a fraction of that in hospitals. In some parts of the world nutrition rehabilitation centres are now well established. Of course they present problems. They tend to be filled with children from inadequate families, and so there is a certain stigma attached to them. It might be possible to reduce this stigma by converting them to general rehabilitation centres, catering for all problems in which the major input is teaching the mother. The problems of establishing any sort of rehabilitation centre are well expressed by a leading expert in the field of nutrition rehabilitation (Church, 1975).

'It is easy when considering nutrition rehabilitation to be distracted by the "centre", with all its problems of structure, staffing, etc., and miss the *process*, which must follow right back to the homes and communities from which the malnourished children have come and prove to be successful *there*. The problems vary not from country to country but for the various cultural, social and family groups within a community. A nutrition rehabilitation programme must carefully analyse each problem and test means of coping with it before including it in any teaching. Blanket nutrition teaching, which is the all too frequent pattern, is as dangerous and irresponsible as the indiscriminate use of antibiotics without a medical diagnosis.

'Doctors must face the unavoidable reality that the chances of survival and full recovery for a malnourished child, and the future for further children, depend largely on the means and ability of

the parents to provide adequate care. Although health services may play a part in tackling the problems of malnutrition, the root causes are nearly always social, economic or political, and as such must be dealt with at that level.'

The Children requiring Rehabilitation

This then is the background against which rehabilitation of the handicapped must be undertaken in developing countries. What constitutes handicap is difficult to define, and depends on social as well as medical factors. However, the kind of children and the numbers of them who might require help through rehabilitation are illustrated from two situations; an urban settlement in Zambia, and a rural area of Nigeria.

Experience of handicapping conditions in Matero, a suburb of Lusaka, Zambia

One thousand two hundred and fifty children under five were followed for two years.

Poliomyelitis

Ten children had flaccid paralysis of one or both legs, and one of an arm. Probably about 1 per cent of children in any developing country are likely to have residual paralysis from poliomyelitis, and a recent survey in Ghana showed a rate of 10/1,000 in school children.

In the Matero group the handicapped children were not malnourished, and the only one of the eleven who was nutritionally unsatisfactory had lost weight during a period in hospital. It was striking how often both legs were affected, and this may be related to the unhappy practice of giving injections to children with any acute illness. The children were seen to lead a fairly interesting and companionable life on the floor of the compound at this age, with nearly as much mental stimulation as their peers. However, they were not motivated by their parents to try to walk, and it was the child himself who struggled to do so, with a minimum of help. The worst problem was that of flexion deformities of the hips, due to the children sitting on the ground all the time. Clearly they will be more disadvantaged later, when they are unable to get to school, yet their best chance of later employment would be in a clerical job. Their mortality during the school years may be increased.

Matero is exceptional in that it is within eight miles of the Lusaka teaching hospital, which has a small physiotherapy unit for these children, and an ambulance to collect them. However, for the mother it is a problem to remember the day, to get herself and younger siblings organized, and usually a struggle to put on the awkward caliper which is not worn at other times. For her it is a whole day lost with little gain that she can see. Only one of the ten children made effective use of the facilities available. Most just sat and crawled until their contractures were bad enough to require admission and surgery.

Major physical defects

There were a number of these, and a child with a cleft palate is a good example. Mavuto was the fourth child. One previous child had died of malnutrition. The mother had divorced her first husband because the father of this child was another man. The condition was believed to be due to bewitchment by the child's father's mother before birth. The father refused to let the mother take the child for treatment, and refused admission to hospital for operation. The mother could only

afford a 2 lb tin of milk monthly, and for the last two weeks the child was fed with maize porridge only. As shown on the weight chart, Mavuto was still just under $3\frac{1}{2}$ kg at the age of 10 months, and died shortly after admission to hospital just before his first birthday.

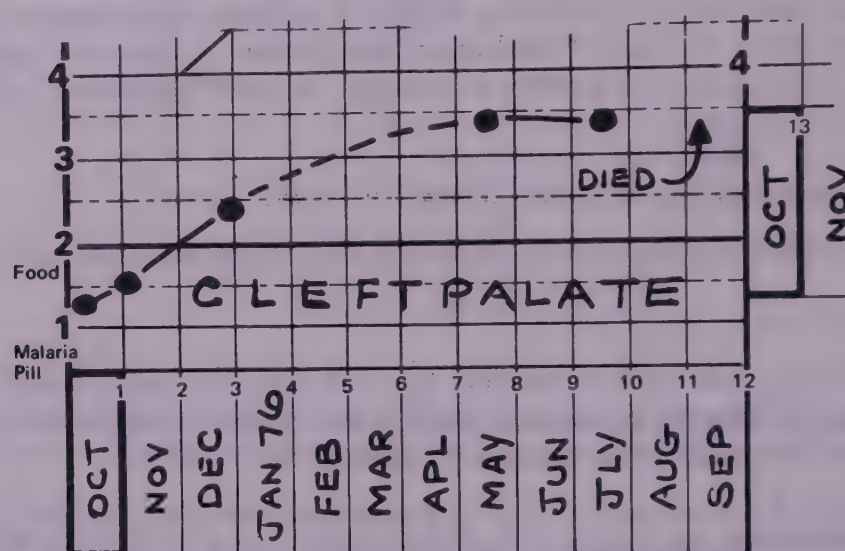


Figure 3. The child with severe disability such as Mavuto with a cleft palate is unlikely to gain weight and survive unless there is adequate primary care and community support.

There was one child with bilateral talipes, whose mother, seeing he could not walk by the age of 13 months, sought help for the first time from a female relative with a reputation as a healer.

Other problems included a brother and sister with ectodermal dysplasia, a child with a hairy face, and a child unable to walk because of contractures following osteomyelitis.

Such children are looked on by the population as oddities, and soon become self-conscious. Unfortunately the health workers react to them as do the general population, with mixed curiosity and avoidance, but offer little practical help or support.

Retarded children

There were several of these and many of them survived nutritionally well at first. Of those with Down's Syndrome who develop measles, one can expect a 50 per cent mortality. The following seem to be the particular problems of retarded children.

1. They may fail to develop the necessary behaviour triggering their mothers to offer them solids, as they do not reach for food and do not walk. For this reason they are likely to die at the time of weaning.
2. Others become neglected when they are too heavy to carry, before they can walk.

3. Many mothers lose interest in such children, who may be abandoned and reared by grandparents, particularly the maternal grandmother.
4. Those who survive to puberty will be very much at a disadvantage over marriage. However, those who have enough intelligence to do simple tasks sometimes find roles as unpaid servants in another family.
5. The less retarded children, such as some with Down's Syndrome, are likely to become more disadvantaged at school age, and the mortality may be high during this period.
6. As they get too large to control physically, they may become a great nuisance in the neighbourhood, as well as at home, in a country where much domestic life is outside, and they can wander about freely.

The community's own efforts

Probably there are already facilities in the community which can do something for handicapped children, which need to be sought out and encouraged. For example, one father took the trouble to build some rough parallel bars under a tree and taught his child to practise pulling himself up and walking on them. A few miles from Matero there was a traditional healer who practised simple magico-physiotherapy and managed to get a number of children walking.

Delayed development from systemic disease

Simple screening procedures for delayed development in, for example, walking could identify a number of children with conditions amenable to treatment. An example of this was Mawiri. Her mother was a prostitute, and perhaps rather ambivalent towards the child's survival, but her grandmother supervised. When Mawiri was first seen at twelve months there was a history of five months' chronic cough, anorexia and vomiting. The child could neither stand nor crawl. She was admitted to hospital. The tuberculin test was negative, but the X-ray showed extensive opacity. She responded rapidly to tuberculous therapy and soon began to walk.

Handicapped children in Imesi, Nigeria

Records of the major abnormalities in this village are available, and Table 1 shows the mortality over ten years from a number of conditions. In a village such as this children with major abnormalities are not expected to survive, and the compassionate indifference to survival shown by the staff is much appreciated by the parents. On the health worker falls the difficult decision as to which of the children they should encourage the parents to hope for survival. A society such as this is relatively stable, and we saw examples of children and adults with comparatively severe incapacity who were leading reasonably happy and satisfying lives with some place in their society.

These two studies present a different and more diffuse picture of handicap than is found in a large teaching hospital. Not only do handicapped children have a higher mortality, but many survive in a far worse condition than they need do. Regular attendance at a centre more than perhaps one or two miles away is quite impractical for a heavy child who cannot walk. Mothers are frightened to leave a child alone in hospital for the long periods necessary, yet cannot abandon other children to

stay with the one who is admitted. Help is not sought from such remote institutions until it is too late to do the best that might have been done. Children with clubbed feet are hidden until they should be walking, children with polio sit until they have contractures, while the mothers of retarded children soon find out that 'no treatment' means momentary interest and no support. Yet in many cases something really useful could be done with minimal skills if started early and available more often, more easily, and close by.

Those working in hospital see only highly selected problems presented there, and solutions based on their experience lead to misdirection of resources and benefit only a minute proportion of the children in need. The present *elitist* system of health care favours setting up small rehabilitation empires at large teaching hospitals, and resources from western countries may be available for this. But what is really needed is a large number of auxiliary and part-time workers with carefully selected skills in rehabilitation. Working at community level, and using simple locally-made apparatus they can teach parents how to make the environment of a handicapped child more stimulating. They can help these children to develop better the potential they have, and above all prevent unnecessary deterioration. Quite simple procedures may improve a child's chances of survival, and quite small improvements may make both his and his mother's life easier. The neighbourly quality of such a service may in itself prove supportive to the child's family.

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DISCUSSION

DR MORLEY, who had just returned from South Africa, said in his opinion the problem there was not one of black versus white but of the re-distribution of wealth. Enormous sums were being spent on such projects as the new 'disease palace' in Johannesburg which would cost anything from £20–£40 million a year to run while the medical provision for non-whites in the country areas was totally inadequate. Doctors, he thought, should be trained in the place in which they were going to work, not in a large, sophisticated teaching hospital elsewhere. People in countries such as Africa would not travel more than three or four miles for medical treatment and probably less for physiotherapy. As populations grew the medical care available could no longer remain even as adequate as it was at present and health problems were increasing and would continue to do so. The 'disease palaces' taught specialization whereas what were needed were doctors who had had a relatively short general training in a teaching hospital but had then completed their training by working for some time in a rural area. Having learnt on the spot about the local needs and problems, they would then be in a position, when fully trained, to teach others.

One group that particularly needed help was that of the mothers of polio victims who required all the support they could get during the early years. The problem was often increased by malnutrition which further restricted the child's activities with the result that the mother gradually lost interest in him. Very much more attention needed to be paid to the young pre-school child. DR MORLEY referred in this connection to the 'umbrella' or travelling doctors of Bangladesh and their

work in the villages. The district centres there produced part-time health workers, selected by the community itself and trained locally. These were often successful farmers who were not on the central payroll but worked under the supervision of the community and the district centre. It was always difficult to change the established customs and habits of a community and called for a close inter-personal relationship between the people and the workers. In the Sudan there were 300 trained midwives who, though illiterate, knew their work and were accepted and respected by the community. It was to be regretted that there were no large rehabilitation units in the teaching hospitals. DR MORLEY ended by stressing once more the vital need to care for the children in their early years.

DR GARST said no priority was given to orthopaedic surgery because governments and other authorities were reluctant to put money into beds. How could corrective surgery be done, or surgeons and physiotherapists trained at the grass-roots? Good medicine was all-inclusive.

DR MORLEY said 'disease palaces' cost as much as one-quarter of their construction costs to run per annum. Smaller hospitals should be built locally. It was wrong to train someone in the type of situation in which he would never work.

DR AROLE mentioned the National Workshop on Disability Prevention and Medical Rehabilitation held the previous July at the WHO Regional Office in New Delhi and read out certain of its recommendations:

'That comprehensive community-orientated disability prevention and rehabilitation services be established as an integral part of the existing health delivery system and in this connection:

- (a) Every effort be made to develop basic services for disability prevention and rehabilitation at the community level. For this purpose, community leaders should be trained in the concept of disability prevention and rehabilitation, mobilization of community support, organization of simple facilities and administration including evaluation of these services by the community itself with the active participation of the health workers at the peripheral level.
- (b) Selected primary health centres be strengthened to provide disability prevention and medical rehabilitation services for a defined population group.
- (c) Comprehensive facilities be organized at the intermediate level (taluk or district headquarters) for referral services and training of health and allied workers and community leaders.'

In his view, the *last* priority should be the building of large hospitals.

MR MARK WELLS said the cost of running a 'disease palace' represented 50 per cent of the construction costs in its first year and 60 per cent in its second. Hospitals of that type built in the United Kingdom in the 1950's were now, therefore, running out of money whereas the type of hospital designed by Florence Nightingale was still able to carry on. District general hospitals were useful but no country could afford to build them everywhere.

THE CHAIRMAN commented that some building was essential. DR PFALTZGRAFF thought the basic part of the programme had been neglected for so long that there might now be a danger of over-stressing. Students were supposed to go to his hospital for training in the care of leprosy but were subsequently refusing to go out into the bush. If they were to do so and teach the people how to give the care needed in the early stages, DR GARST added, there would be fewer cases of patients arriving at hospital after a couple of months or so when major surgery could no longer be avoided.

DR MORLEY wished that governments would seek the advice of doctors before deciding what their priorities should be regarding hospital building and medical care.

SUMMARY

Summing up the main points made during the morning's meeting, MR COOPER said Professor Golding had advocated taking the widest possible view of rehabilitation as a whole, greater community involvement, the encouragement of self-reliance among the nationals of developing countries with minimum outside help being sought, the training of local personnel, taking stock of what was already being done and where the necessary finance could be obtained before developing ambitious plans and insistence on prevention as being better and cheaper than cure. Dr Cross had urged careful selection of patients for treatment, the need for physiotherapy as an essential part of such treatment as well as the use of appliances, the need for psychological preparation and after-care and the absolute necessity for following up every case. He had also spoken of the value of a locally-based philanthropic society. Like other speakers, he recognized that immunization programmes were the only real answer in the fight against polio. Miss Levitt had stressed the need for interdisciplinary methods in dealing with disabled children and the way in which parents could be shown how to apply the simpler techniques. She had also suggested training one individual in a village to act as a kind of rehabilitation officer to advise, instruct and help families of handicapped children. There was some difference of opinion as to the best way of training people to work with disabled children but general agreement that it should not be entirely theoretical but a part of it given while they were actually working on the job. Dr Morley had concentrated on the mistake of spending large amounts on building and running large 'disease palaces' where the students were taught specialization with the result that they became unwilling to go out and work in the field where they were so badly needed but would be without the sophisticated facilities to which they had become accustomed. What were needed were local health centres and work at such centres should be part of any medical training.

PROBLEMS OF DEVELOPMENT OF TECHNOLOGICAL SERVICES ON A COUNTRY-WIDE BASIS IN INDIA

DR B. SANKARAN, F.R.C.S.

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Provision of a comprehensive rehabilitation service for a population of 635 million is no easy task. The Government of India with the various State Governments have tried to tackle this problem commencing from Fifth Plan period in a very vigorous way.

In 1972 a survey of the existing units and the quantum of coverage of the country particularly in the rural areas were carried out with supplementary information already obtained by a team sent out by the World Health Organization in 1963 and a team sent out by the U.S. Army in 1962. This survey carried out in January 1972 indicated certain significant factors:

1. There were centres of excellence primarily concentrated in two or three cities with a large orientation and bias towards the cities.

2. That the financial support for some of these centres were dependent on ongoing PL 480 programmes and that emphasis on self-reliance had become necessary to modify these centres to suit to local needs and local population.
3. It became apparent that if services have to reach the periphery then there must be a major manufacturing plant with a large number of peripheral limb fitting centres to cover the length and breadth of the country and these centres initially would have to be located in the various medical colleges, railway hospitals, coal mining areas, industrial sectors depending upon the states and the concentration of labour, the problems of mechanization of agricultural machinery, extent of infectious diseases that require rehabilitation like leprosy, etc. For this purpose a number of peripheral limb fitting centres were started and some regional centres were aided to upgrade them to the level of excellence so that they can deliver services to a large number of people with products from the main manufacturing unit. It also became apparent that such centres will have to be converted into fully fledged rehabilitation centres with the passage of time when more knowledge, expertise and personnel become readily available with orientation to serve in the rural areas rather than in cities. It also became imperative with the new social climate which is being given to the country with the emphasis of services to the down-trodden that centres should be set up to cater to the needs of the rural population and the emphasis on transfer of technology to the rural areas. With this purpose a centre was started with training facilities to inculcate a sense of responsibility in each trainee for service in the villages. This centre is still in its infancy and its success will primarily depend upon carrying home the message of necessity of services to the peripheral areas. A three-tier system for health delivery care is being evolved so that the multipurpose worker, the block health assistant and the District Headquarters Chief can all play their parts in the field of rehabilitation.

The necessity for this has been felt by the recent Seminar conducted by the Government of India in concurrence with the World Health Organization and it is proposed to evolve a working pattern at the end of this year or early part of next year with the administrators taking an active part so that by the Sixth Plan period which commences in 1979 we will have brought an outline of health delivery programmes in the field of rehabilitation also. A large lacuna will still exist in children's rehabilitation centres and the rehabilitation of the mentally retarded, in the rehabilitation of leprosy patients, the amputees and the paraplegics at the village level. This venture that is being started with the help of the Honourable Prime Minister funded from the National Defence Fund will have a good augury for the development of a well-knit system of services orientated centres which would ultimately deliver services to the periphery. The Government of India has come to realize that one or two centres of excellence located in big cities do not necessarily either provide the services or provide adequate coverage though they may be show pieces of the country to the outside world.

DISCUSSION

After saying that he brought greetings from his Government and an expression of its gratitude for the organization of the present Symposium, DR SANKARAN said rehabilitation in India had had a somewhat chequered career. It had begun with the work of UNICEF and WHO in the 1950's but such health centres as existed had grown up in most cases round medical colleges and with a strong bias towards the cities. A survey carried out in 1972 had shown that there were twenty-three such centres which covered no more than a fraction of India's huge population and left areas

whose population amounted in all to some 262 million without any centre at all. Quick and effective action was called for and this was fully realized by his Government which hoped, by the beginning of the Sixth Plan period in 1979, to have an outline health delivery programme for the rural areas although this would still leave vast gaps to be filled.

In view of the existence of an estimated 1.2 million amputees, a manufacturing corporation in the public sector for artificial limbs and braces had been established in Cawnpore and was now in production. It was intended as a pilot scheme for the local production of prostheses and it was hoped that ultimately some 800,000 might be produced annually which would be made available on a relatively cheap and equitable basis. A new fund was being set up for this and financial help was also being given from the Prime Minister's National Defence Fund. The intention was to create one health centre in each State, with as many as two or three in the larger ones. These would definitely be village-orientated and would each cover an area containing about 5 million inhabitants. They would be staffed from the local medical colleges.

Six regional centres were being set up and as more money became available it was hoped to establish twenty-six peripheral centres providing teaching as well as treatment by 1981. Eight leprosy centres were also planned for the east coast. These would be free of all kinds of taxation and their materials, when imported, would be free of duty. Basic technological information was being provided by the Veterans Prostheses Corporation in New York and California without charge at a saving to India of some \$4.5 to \$5 million. The Ontario Children's Centre in Canada was also providing them with free appliances. It was hoped by 1986 to have established one health centre for every 5 million of the population. Efforts were being made to identify potential multi-purpose workers at village level who could be given adequate training. This would be done in consultation with the Departments of Labour, Railways, Health and Industry and other authorities, on the recommendation of the State governments, health in India being a State, not a Central Government, responsibility.

So far as dissemination of knowledge was concerned, the National Institute of Physiotherapy and Occupational Therapy ran twelve-week training programmes and also provided refresher courses. Six technicians had been sent there from Laos for training and a combined course for doctors, occupational therapists and physiotherapists and makers of prostheses had been arranged in a village during which twenty-three leprosy patients and fifty-six other patients had been treated. It was impossible simply to 'transfer' western techniques to eastern countries unless the latter set up their own technological centres which would, *inter alia*, evaluate the different methods and their success or otherwise on the basis of feed-back information.

In answer to questions, DR SANKARAN said it was proposed to set up an advisory centre as a testing agency for techniques and, while agreeing that this might lead to a certain amount of over-standardization, pointed out that it was a choice between that and nothing. The existing centres, however, were somewhat more independent. At present, they were fitting an intermediate type of prosthesis and orthosis, for the lower extremities and without joints; but they hoped to do more in time with knee joints, feet, etc. They would discover in due course which were most acceptable. It would take a hundred years to make sure that all amputees had the necessary prostheses and it was unlikely that they would ever be able to fulfil all existing needs. The probability was that they would only be able to help new cases. Efforts were being made to show the people how to make simple prostheses for themselves. Jaipur, for example, had many good craftsmen and a number of amputees were now using peg legs made locally. Another example was the local production of

leprosy footwear in Orissa where one village was turning out a thousand a month. In other places, the patients were making their own footwear. It was hoped that the present arrangements would precipitate a chain reaction and India would be glad to accept trainees from any country with which she had a cultural agreement, with the Indian Government paying all expenses. It might be true, as suggested by one questioner, that people were demanding ever more sophisticated aids but the self-help schemes were working and it had been vital to get something started.

REHABILITATION IN RURAL AREAS

N. M. PATIL

Medical Appliances and Rehabilitation Clinic, Jalgaon District, India

I am glad to be here today among you to say a few words arising out of my varied experiences in villages. I must thank those who have organized this Symposium. During my participation if I say something in my paper which is not approved of, I should be excused.

When I look back I have a sense of satisfaction and feel that much has been achieved but much more is yet to be achieved. During the fifties, there was only one training school of Occupational Therapy started at K. E. M. Hospital, Bombay, by Mrs Kamala V. Nimbkar. She had to encounter many difficulties to get recognition from medical personnel. I can quote examples how medical personnel used to talk but now the same people know much more and are called senior experts in this physical medicines and rehabilitation field. It is really a great achievement and due to the devotion of Mrs Kamala V. Nimbkar (her financial help, work without salary, sympathetic attitude towards students, etc.).

Later on more Training Schools and Rehabilitation Centres gradually developed but in urban areas only. There has been a move to work in rural areas but who wants to go there?

I and another Occupational Therapist who had worked with me in Nagpur set up a Medical Appliances and Rehabilitation Clinic Centre in Jalgaon, a district town with the population of about 100,000 but in nature still a village surrounded by villages – dozens and dozens. We also set up monthly clinics in one large village about 50 km from Jalgaon.

Out of my twenty-four active years in this field, I always observed that the majority of the clients came from villages and, poor things, they get lost in big city hospitals. This specialized service is available only in big hospitals located in big cities. No doubt, we have medical social workers who help clients etc., but does it really work? Words cannot explain the story of such clients. I wish I could give examples of the way they are exploited. In these twenty-four years I was for ten years closely associated with villages as Principal Investigator of Social Welfare and Rehabilitation Services Projects in India, thanks to S.R.S. of U.S.A. During this period I confirmed my primary experiences that villages need help very badly. It is not that I depended upon reports from Medical Social Workers, Data Collectors or because I talked to villagers in my posh office, etc.

I myself spared more time to wander in the villages in order to visit some of the clients and study their needs. One is not, of course, expected to visit all the clients. Needs were found to be numerous but still they were met, due to the generous assistance from S.R.S. I feel that the man who is heading the show must personally see for himself, but too often he says 'No time to do this. My

staff are there'. Well, I do not agree with this; if one wants to do it, there is a way. Rehabilitation means missionary type of work. Secondly, I believe that the head man must be a multi-purpose man. This saves wastage and maintains high efficiency. This will mostly be more developed by those who have good work habits and have worked in private institutions. Anyway, to be more specific we did (1) a random and general sample survey; (2) produced a directory of facilities for the physically handicapped; (3) carried out a study on paraplegics. But I found that to do this work to one's satisfaction, time should not be limited. This is absorbing work and village clients take more time and energy to have them understand our work and us. We also need more time to know them better. So I feel limitations of time to work in rural areas does not prove satisfactory. Besides not very many experts like to go to rural areas. So rehabilitation work has been held in abeyance. However nowadays the climate to work in rural areas is being created. In short, with all this personal background, I developed an idea to start rehabilitation work in my native district. When I approached the Jalgaon Medical Circle they all showed the need of such services and since this is my native district I thought of opening a regular clinic, so that villagers could get treatment for paralytic and other conditions which otherwise was not available except at Bombay, about 300 miles away.

Never knowing what is private practice, one day in 1972 my Clinic was inaugurated by the then Civil Surgeon of the district. This function was attended by most of the medical personnel of the town. It was a nice and stimulating function.

Then when I started in the Clinic, I found from some clients (who had been to their 'doctors of faith') that their doctors didn't know that there was treatment for a fresh case of polio and the advice given to them was that the client will not recover. This may have been due to the fear of losing a client or to not knowing much about the subject. If at this juncture, I say that the child will be able to walk, with or without calipers, the parents rarely believe it as they have already been told that there is no treatment.

Anyhow some educated parents do agree to try out the treatment and when they find some progress they continue it and one day the child walks with support.

The general public never knew of this therapy. Treatment without an injection, i.e., syrup on tablets, cannot be real treatment and the few that do know about this, know only of massage. Ignorance, illiteracy and blind faith lead them to use the following treatment of paralytic conditions: pigeons' blood used for massage, burying paralysed limb in cowdung pit, application of mud, application of the leaves of a particular bush, plant or tree boiled for a long time.

Whenever I asked the client if this treatment proved useful the answer was negative. Now if I talk of the use of an appliance to support and help improve the function of the paralytic limb the client or his parents is found to be confused and frustrated. How and how long to make the client understand? I wish every medical practitioner knew this subject to avoid confusion. It is also true that those who know a little do not hesitate to claim themselves as experts and carry on this work to earn maximum out of the client.

Appliances and Psychology

Recently it was said that one should use local material for the appliance which surely reduces the cost. It serves the purpose but does not have the same appearance as that produced in a city like Bombay.

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These days even an average person likes to copy fashion. Thus those who are in touch with cities like to have their appliance 'Bombay-made'. In such cases, special material has to be ordered from neighbouring cities. So while fitting the device if another client sees it he says 'why does mine look different?' The difference is due to local material being used. But when the client says 'I would have paid a little more and got the same; why did not you tell me?', there comes a problem. So what I want to point out is that everyone, irrespective of whether he is a village or city dweller, likes better looking articles. Of course, the very poor have no choice or cannot afford it at all. It will take some time to accept less polished type of appliances. Secondly, due to religious feelings some persons do not like to have leather-made appliances. They cannot worship God while a leather-made article is worn.

Appliances Locally Prepared

Hernia belts, spinal braces, cervical collars, splints, rubberized seats can be made from a truck's inner tube, etc. A hernia belt is so simple that only a pad is attached to the pants' belt that we normally use.

Other types of hernia belts are available, either ready-made or by order, made with a hard spring to promote pressure on the hernia, and joined fast around the waist. It exerts pressure on the anterior superior illiac spine. This is apt to cause discomfort and pain and eventually it is not used. Usually these clients are aged and have no musculature. Moreover, our villagers have poor physique. For example some of my clients who are residing in a village look old enough to be grandfathers and very far from young. I myself have been surprised when I learn they are from 30 to 40. This seems due to the poor diet, hard work and marriages of daughters.

Cervical Collar

It is prepared of P.V.C. material available in the city market and nowadays Velcro is added to fasten the collar. This is fascinating to the client and so some clients would like to have the same thing irrespective of the cost. Some poor clients also seek the same though they cannot afford it and this creates misunderstanding and distrust.

The same material is not available locally and if we get it from Bombay the cost of that collar and the cost of a collar prepared from indigenous material differ very much. Rich clients prefer to wear only P.V.C. collars. For the poor a collar is prepared out of a used or new plastic bucket. However, for cushioning we get foam rubber instead of Dunlop sponge. In some cases, we used a rubber inner tube to cushion and cover the edge of the collar.

Rubber Seat

This is used mostly for paralytic persons who cannot use an indoor wheelchair due to space problems or to an old house having architectural barriers. It is no use on village roads.

Material used is a truck inner tube designed and cut to fit both buttocks. It is tied with straps. One can use straps or buckles but the aim is to simplify the gadget so that an illiterate person can manage and use it easily. It may seem odd but it is suitable for an Indian type toilet or bath place as well as in a small or crowded room.

Rope Bar

Normally a parallel bar requires considerable space; though houses in villages are bigger than in cities, yet space is not easily available. Why? The reason is that as the owner's profession is farming, farm products, etc., are stored in the house.

Thick rope of good quality which can be gripped easily is used in such a way that its ends are tied to some firm object like a window or a pillar at waist level of the person. This arrangement is made near his bed and along or possibly close to the wall side. This helps in manoeuvring and in case of a fall, the wall is of some support.

When a side wall is available a bamboo is fixed along the wall and on the other side a rope is tied tightly. How tight? Tight to the extent that it develops maximum tension offering stability and support. However, it cannot be as firm as bamboo but sometimes this is the best one can do and results are satisfactory. (Farmers usually have good upper extremities and can move and manage the rope bar, although a little unsteady.) One patient developed this idea for his walking practice and another tied an overhead rope.

For getting in and out of bed and to sit up in bed – an overhead rope is used. It can be conveniently attached or tied to wooden ceiling batten.

In case of fracture and dislocation villagers use about $\frac{1}{2}$ in. wide bamboo sticks sufficiently long enough to cover the fracture or dislocation. These sticks are joined side by side at a distance of $\frac{3}{4}$ in. by a rope and on both sides loose rope ends about 5 in. long are kept to tie round. Such rope is tied to sticks lengthwise at a distance of 3 in. Before tying the troubled spot is wrapped in cloth and then the sticks are placed round and tied firmly by the loose rope ends.

In the case of a paraplegic in the village situation, while passing a stool a bowl with ash in it is used. In some places the bowl is covered at the top with wood leaving a gap in the centre. While passing urine only the bowl is used. The bowl is of the type normally used for farm work.

Caliper

These days aluminium and mild steel are used to make calipers and for upholstering costly belt or sponge and leather are used. This material is commonly used in rehabilitation centres of course. Fine quality chrome and hard press soles are used. But when I prepare a caliper for a village client, the material used is iron strip for caliper bars, thick soft coarse blanket cloth and cotton rexin for upholstery, leather straps and buckles for fastening clip and for shoes, medium quality chrome and (Kutch) raw hide for the sole. This Kutch hide is pounded and then used for the shoe sole. Iron caliper bars are electroplated to prevent rusting and in rare cases when client is exceptionally poor anti-rust black paint is given to iron bars instead of electroplating.

Posterior Knee Support

To make this support a used or a new plastic bucket or tube, thin, i.e., $\frac{1}{4}$ in. wide, aluminium strip, split rivets, leather straps and buckles are used. Aluminium strip is used to help give a convenient gutter shape.

Hand Splints

Usually prepared out of leftover pieces of metal, leather, P.V.C. or plastic. For dynamic hand splints in place of rubber, elastics cut off from cycle or motor cycle rubber tubes are used.

Crutches

Various types of crutches are used in rural areas. Even a unilateral above-knee or below-knee amputee walks with a special crutch which has a small board on which to rest when standing. Only one crutch is needed in this case. To make this bamboo or local wood is used.

There is one more type of crutch-cum-prosthesis used by a below-knee amputee. The thigh is held between two upright sticks and on the top of the extension bar (usually a thick, round-shaped piece of wood) a small board about 4 in. to 6 in. in length, the width depending upon the girth of the knee, is fitted when the stump is in flexion. This is tied with a bandage.

SUMMARY

It is nice to say all this but when clients say this appliance is inferior to appliances they have seen in cities, this poses a problem. When local material is used for an appliance the appearance is different and so it is said to be below standard. What is 'standard'? To me anything that serves the purpose, can be maintained easily and cheaply is my 'standard'. Regarding therapeutic knowledge village medical personnel having yet to know many things and unless they know it, proper rehabilitation for masses is difficult. But then these village doctors are not really allopathic; they are Ayurvedic or homeopathic or Vaidyas.

DISCUSSION

MR PATIL said he had worked largely in cities until he decided with a colleague to set up a medical appliances and rehabilitation clinic in Jalgaon, a town which despite its population of some 100,000 was still in essence a village surrounded by numerous other villages. He had managed to acquire some twenty or so unused prostheses which he was able to use successfully (until the supply ran out) by altering the inner shape of the socket. The patients issued with them were encouraged to come to the clinic in Jalgaon, or to the village clinic some 50 km away where they held monthly sessions, to get them repaired or to learn how to use them successfully. It was best to keep such appliances very simple so that they remained inexpensive and repairable easily. The difficulty, as explained in the report, was the difference between these and the more sophisticated (and expensive) appliances made in Bombay which made the former appear sub-standard. So far as he was concerned he recognized one 'standard' only, which was that the appliance served its purpose and could be made easily and cheaply but it would take time to get that view generally accepted. **MR PATIL** showed sketches of various appliances that were made locally and used in his clinics.

Points made in the discussion that followed were: (i) a child-walker could be adapted for use inside a small house, or a child given an ordinary chair to push; (ii) prostheses made of plastic had been shown in practice for a number of years to be highly successful but a good fitting socket was vital (**DR GARST**); (iii) there was often a communication problem, one way to overcome which might be to give village schoolchildren simple readers that would encourage them to examine their own village and its wants and so benefit the community as well as learning themselves; (iv) medical stu-

dents should be given some training in physiotherapy and occupational therapy and lectures on conditions and needs in rural areas.

REHABILITATION IN LEPROSY

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Medicine and surgery are concerned with health and harmony within the human body. Rehabilitation is concerned largely with the interface between the body and the outside world. Thus most of the principles of health and healing are applicable to any part of the world because, with minor differences, the body is subject to similar ills and meets them with comparable internal equipment. Principles of rehabilitation are much more difficult to transplant from one culture to another, because ideas and equipment that make good adaptation to an industrial society may result in a barrier to integration in a primitive environment. An interface has two sides, the side towards the individual that must be suitable to him or her and the side towards the environment that must be acceptable to it. Both are essential to rehabilitation.

My subject is leprosy rehabilitation, international, and I am going to consider it in relation to three important interface areas. First is the interface between the patient and the professional medical team. Next, the interface between the patient and society and, finally, the mechanical interface between the patient and his immediate physical environment.

First, I must make a general comment on the difference between a biological or living interface and one that is inanimate. There is a simple predictability about the result of two non-living surfaces meeting each other. The harder one is likely to indent the softer. One may retreat and another advance. If a certain result occurs today, a repetition of the same action by similar surfaces will give the same result tomorrow. In a biological interface, the living cells that meet an external force not only respond to it but remember the impact and change their nature or their shape so that a repeated impact with the same external force will find the living interface has changed and its response the second time will be different.

Interface I. The interface between the patient and the physician.

Leprosy rehabilitation is dominated by the problem of stigma. The patient is afraid of the public. He shrinks from exposing himself. He would often rather be without treatment than go to a physician who would let his secret out.

Thus, the physician must be trustworthy. Word gets around among patients. They know who they can trust to understand their fears and to keep absolute confidence until the patient is ready to lose his own cloak of anonymity. This means that a rehabilitation clinic should rarely be labelled 'leprosy'. It should be for 'neurology' or for 'skin' cases. Diabetic feet, leprosy feet and spina bifida all go well together. Polio hands and leprosy hands and rheumatoid arthritic hands have much in common. Whereas for the education of the public the word leprosy has to be used. The patient's own records should use some other term such as mycobacterial neurodermatosis. 'Hansen's disease' was a useful cover-up at one time but it has been spoiled by the fact that many people have tried to make it into a common terminology so that now too many people know that it means leprosy.

If the members of the medical and rehabilitation team are relaxed and friendly and tolerant of

the sometimes hostile and unreasonable attitudes of the leprosy patient, then the rigid protective shell of the patient will soften and real communication will become possible.

Summary of Interface No. I: Patient may be hard and protective. Physician must be compliant and relaxed and encourage trust.

Interface II. Patient–Public.

In most countries the public has an unreasonable fear of leprosy. It is the duty and responsibility of all who know better to use every opportunity to change public opinion, so that leprosy patients may have a better opportunity for meaningful rehabilitation. However, it is wrong to encourage expectations of a quick change in public attitudes. If leprosy patients are going to wait for the public to change, they will lose the best years of their lives, and will always be frustrated. *The only attitude that is under the patient's control is his own.* The only attitude that the rehabilitation team has any hope of changing within a few weeks or months is that of the patient and perhaps his family and maybe an employer or two.

Too much identification with the outlook of the patient may encourage him or her to harden his shell toward the outside world and stiffen his side of that interface while he waits for the world to become compliant.

Thus, as soon as the patient is sure we are on his side, we have to help him to understand the root causes of the attitudes of the public, and to accept the fact that it will not change fast. He has only one life to live and had better face reality and begin to adapt his expectation and his strategy to the reality that he cannot change.

Summary of Interface No. II: We have to help the public to understand while we help the patient to be adaptable and compliant.

Interface III. Patient and physical environment.

The most serious physical problem of the leprosy patient is the loss of pain sensation at the surface of the body, especially hands and feet. Because he cannot feel, he gets frequent injuries and 'pressure sores' which become infected and lead to the destruction of his fingers and his feet.

The instinctive response of most people who work with leprosy patients is to find ways to protect the hands and feet. A wide array of adapted tools and equipment have been developed to protect the hands while special boots and shoes and plaster casts keep the feet safe. All the attention of the rehabilitation team is directed to the physical environment of the patient. The patient's own limbs are regarded as inadequate so the environment has to adapt to him.

In highly developed countries it is not very difficult to provide a sheltered environment for patients with insensitivity. Most heavy work is done with machines and the controls and handles of machines can be covered with soft materials and designed to fit the hands. Most people wear shoes all the time, and it is not difficult to make moulded insoles to protect the feet from high pressure. Thus, it is reasonable to put emphasis on the alteration of the environmental side of the interface.

In the countries where leprosy is common most people do not wear shoes, and most people work on the land in some aspect of farming. The patient who wears special shoes feels ridiculous, especially if he tries to wear them in paddy fields. With scores of different hand-held implements such as spades and hoes and trowels which may be in common family use, it is difficult for a patient to

insist on special handles for all his tools. More than anything else he wants to be regarded as normal, and everything we advise marks him out as strange. The result is that our advice is neglected, and our shoes discarded and the patient gradually loses his hands and feet.

For these reasons, during the last few years we have been studying the human side of the interface as well as the environmental side, and have tried to identify the actual causes of the breakdown of insensitive limbs. We have found that the skin and surface tissues of denervated limbs have resources that have not been taken seriously enough, and that can be developed so as to minimize the need to alter the environment.

We have identified and defined four distinct and different ways in which the limbs are damaged when they become insensitive. For each of these four dangers there is a different way of protection. Common to all of them is the need for the patient himself to understand the danger and to know how to take appropriate action and to assume responsibility. I believe that if the rehabilitation team will take much more time helping the patient to understand and take responsibility there would be much less need to build apparatus and create a new environment.

The four types of damage are:

1. Damage from ischemia.
2. Damage from mechanical rupture or thermal necrosis of the skin.
3. Damage from inflammatory autolysis of the tissues, secondary to repetitive mechanical stress.
4. Damage from infection, through wounds caused by any of the above.

1. *Ischemia*

The patient must understand that even very low pressures (100 gm/cm^2) can result in loss of blood supply to a part, but that hands and feet can tolerate lack of blood for several hours without harm. It is only when a low pressure is continuous that it is dangerous. Tight bandages, tight splints and tight shoes or sandals are the commonest causes of sustained pressure. They can all be avoided by thoughtful anticipation and care. New shoes should be worn only about two hours at a time, after which the patient looks for a red area of reactive hyperemia in response to previous pressure ischemia. Even old shoes should be changed midday.

2. *Mechanical and Thermal*

It takes a very high pressure to break through the skin and cause a wound. If the pressure is evenly applied, human skin on the palm or sole can accept 50 kg/cm^2 without damage, and this is much higher than is likely to occur in ordinary use. The trouble comes when a patient steps on a sharp edge of stone or broken glass. When the area of the edge is very small, even small forces result in very high local pressures. An insensitive hand is in danger when any very small metal handle is used. Patients can be taught not to use great force with their hands, but since force is hard to judge in the absence of sensation, it is easier to insist on very special care just when small handles have to be used. We provide slip-on handles to enlarge the area of contact for small handles like keys. At one time we would not allow people with lack of sensation to work at jobs that involved the use of circular saws, hand saws or other sharp-edged instruments. We now realize that even normal people do not avoid getting cut by hand saws by a sense of touch. They use their eyes and their common sense. Leprosy patients can do that equally well.

We advise simple shoes or sandals to protect from thorns in rough country walking and gloves

for rough work and for cooking. For the most part, we find that patients who want to preserve their hands can learn to avoid wounds and burns.

3. *Repetitive Stress and Autolysis*

Causes 1 and 2 are simple and relatively easy to prevent. The problem of repetitive stress has until recently been mixed up with the other two in our understanding. It is harder to understand; it is much commoner than the others; it will never be successfully controlled or prevented unless it is clearly and separately identified.

In 1, we were talking about pressures of 0.1 kg/cm^2 sustained continuously for many hours.

In 2, we were talking about pressures of maybe 50 kg/cm^2 and higher.

In 3, we are dealing with the common pressures of everyday living and working and walking. They are of the order of 1 to 10 kg/cm^2 or more importantly 2 to 5 kg/cm^2 . These pressures are painless to normal skin and harmless to normal and insensitive skin but they are strong enough to *stimulate* the tissues. A typical example of a 2 kg/cm^2 force is when a person claps his hands in applause. Painless at first, the hands begin to tingle by the time the first 'encore' is offered, and clapping finally is brought to a halt as much by the discomfort of the hands as from loss of enthusiasm for the performer. At that time, the hands are hot and are mildly inflamed. If that same force of clapping were to be continued for hours, even with intervals for rest, the skin of the hand would become severely inflamed and would then bruise, blister and finally ulcerate. No normal individual could tolerate such a process, but an insensitive person could, and does accept similar repetitive pressures to his own destruction. Thus, the sequence of events for a normal sensitive limb is as follows:

Repeated stress (as in walking) – no pain, mild inflammation.

More repetitions of stress – inflammation, discomfort.

Still more stress – severe inflammation and *pain*

– limping, change of gait

– reduced stress

– recovery without break in skin.

For an insensitive foot:

The same stress with the same repetitions – mild inflammation.

More stress – severe inflammation, *no pain*, no limping

– ulceration, infection, destruction.

Hypertrophy

While a normal foot goes through its sequence of stress–pain–rest–recovery–more stress, a change takes place in the skin interface. The skin becomes thicker and its surface is callused. The foot or hand becomes tougher and better able to meet further stress.

An insensitive hand or foot has the same capability to respond to stress by hypertrophy, but is usually damaged and ulcerates before this can be accomplished. It then has to be encased in plaster casts and boots which allow the ulcer to heal, but removes the stimulus to hypertrophy. Thus, insensitive hands and feet tend either: (1) to become destroyed by ulcers and infection; or (2) to become weak by over-protection.

When the weak, over-protected feet are suddenly exposed to real stress, as when shoes are worn out and replacements are not ready, then they rapidly become damaged because their living surface is weak.

I have been impressed in India and in Africa, when I have visited rural farm areas, that peasant farmers with leprosy manage to live active lives and develop strongly callused hands and feet which protect them quite well against average stress. The elders of a family or of a farm community seem to understand the need to limit the activity of these patients. Those who go out in the forest to gather firewood get thorns in their hands and feet and get into serious trouble. Those who walk on hard paved roads also need help. Agricultural soil tends to be soft and is always irregular so that different parts of the foot take the thrust of weight bearing. Because every step is different, no one part of the foot gets as much repetitive stress as it would on a paved road. This is good and encourages hypertrophy.

The one essential requirement is for the patient to *understand* how repetitive stress works and what kind of ground is harmful and what kind of walking or working is bad.

Thus, for callused bare feet, ploughed land and paddy fields and grassland is good. Paved roads are bad and thorn country is dangerous. A simple sandal with a soft insole is good for paved roads, and the same for the forest. For the farm, bare feet or flexible moccasin-type footwear may be good. Even when a person has to wear protective footwear for much of the day, he should probably walk barefoot deliberately part of each day to build up his own sole. Such walking should be on sand or grass or other compliant or irregular surfaces.

Perhaps the most useful aspect of the understanding that a patient must develop is to know that when repetitive stress is about to cause trouble, the hand or foot will show signs of inflammation. The affected part will get hot and feel hot for hours or days before breakdown occurs. If a patient develops the habit of feeling his feet every evening at bed time (or getting a friend to feel them if his own hands are insensitive) then he may recognize that part of his foot is in danger and needs to be rested the next day.

4. *Infection*

The real significance of the three ways in which insensitive skin is damaged is that each of them opens a pathway for infection. I had always assumed that the destruction and absorption of insensitive limbs were often due directly to unguarded mechanical force. Our own research in the past ten years has demonstrated that it is *mismanagement of infection* that results in the destruction of bones in the insensitive hands and feet.

Thus leprosy patients, diabetics and others who have insensitive limbs may injure and break their skin without undue harm, providing the resulting infection is treated immediately and seriously.

In the absence of pain, workers will forget that they have an infected finger or foot and will work and walk freely, forcing infected fluids into uninfected tendon sheaths and bones with disastrous results. Insensitive tissues can localize infection and heal wounds perfectly, but only if they are allowed complete rest while doing it. This is probably the greatest single challenge to the rehabilitation team. We have to be able to provide complete rest and immobilization to any wounded part of a limb without taking the patient out of the stream of work activity.

Thus, today a man may need a thumb immobilized but must still use his hand. Next week he

may need his foot immobilized, but must still be able to walk. The ideal is for a doctor or therapist to be always available to apply plaster casts. This ideal is rarely attainable, and perhaps is not even ideal because it induces a sense of dependency. It would be best if the patient himself could apply pre-formed finger splints whenever he cuts or burns a finger. We have used polyethylene gutter splints attached with adhesive stripping. A patient may keep half-a-dozen of these in his first-aid kit at home. For the foot a pre-formed wooden or plastic splint may be used in which the leg can be fixed with a few turns of plaster of paris. A simple wooden device has been used in Liberia, and a 'rubber rocker' in India. Both are good if the problem of localized pressure can be avoided. Plastazote is a material which is self-moulding when heated, and can be used as padding to line an otherwise crude and inexpensive walking device.

There is real room here for a plastics engineer to come up with a simple re-usable material which may be kept at the home or workplace of a patient to be used as an emergency splint in case of injury. Finger splints must be snug and inconspicuous or else there is danger that they will not be worn or that, being worn, they will prevent the patient from continuing his work.

Millions of people of working age have insensitive limbs. They can all be active and productive only if the patients themselves have confidence that they can work without the danger of the progressive destruction of limbs which they will often have observed in the past.

DISCUSSION

For **MR BRAND**, one of the keys to the problem lay in the interreactions between patient and doctor and patient and public, as well as in the mechanical reaction between the patient and his immediate physical environment. Any living body would respond to an external force but in so doing undergo a certain change so that its next response would differ from the first. Hence, it must be dealt with from the inside. Those engaged in leprosy rehabilitation had to learn to study the patient's own felt needs and whereas, before treatment, he might be actively hostile to the idea, once he could be got to realize that an effective treatment did exist the whole situation could change. Formerly, patients were concerned mainly with the deformities produced by the disease and their main object was to check it and return to their village. Once they had achieved this, they were no longer interested in continuing with the drugs given them and the majority gave up attending the clinic after about three years, the result being that the number of patients had increased over the past ten years. In addition, they were becoming drug resistant and the only drug cheap enough to permit of world-wide use had a life of probably not more than five years. The main preoccupation of the authorities, on the other hand, was to identify patients and endeavour to prevent the disease from spreading to the next generation. The only answer was to bring about a total change of attitude on the part of the patients and to let them understand that the medical team was on their side, a change which would also improve the relationship between the patient and the public. A fundamental point was the attitude of the family. In the west there was a tendency to ignore it; elsewhere it was still a force and a resource and it was unusual for families to reject patients suffering from leprosy or other diseases. The ideal pattern was very short-term admissions to give the necessary treatment, combined with intensive efforts by the rehabilitation team to educate the family and employers to understand the position, and also help the patient to understand the fears of the public.

MR BRAND went on to expand the information given in the report on the physical effects of leprosy, the most serious of which was insensitivity, its causes and methods of dealing with it. Patients should have this explained to them and be taught the significance of certain symptoms and

how to relieve them so as to prevent serious damage. It was a great step forward if the patient could feel that he himself was part of the healing process.

DR RAMA RAO said the man in the street was still highly prejudiced and it would be an excellent thing if no leprosy patient were to speak to any member of the press for the next ten years. MR BRAND agreed, saying it had taken twenty years to remove the stigma attaching to leprosy, if not longer, and doctors ought now to integrate their treatment of leprosy patients with other work. In answer to a question, he said experiment had shown that chronic ulcers would heal successfully inside a walking plaster cast. Answering a further question as to whether, in areas where leprosy was endemic, it should be treated separately, he said some leprosy hospitals were attended by non-leprosy patients needing artificial limbs because it was known that an extra good fitting was necessary in cases of leprosy and they wished to take advantage of this. DR PFALTZGRAFF also advocated integrating treatment of leprosy and other diseases and said he had never heard any complaints from the other patients. In Ethiopia by far the best hospital was the leprosy hospital.

Mentioning family care, MR COOPER said while this had previously been the accepted custom in Asia and Africa it was gradually breaking down in the conditions of urban life. MR BRAND still thought it could be relied on so long as the doctors refrained from moving the patient. The family could not, he said, fit casts but this was done by experienced paramedical staff. To a suggestion that leprosy patients were still segregated in some countries, he replied that segregation as a policy always failed as there would always be cases that escaped detection and so spread the disease. He added, in reply to another comment, that there was no need for a leprosy patient nowadays to be a liability to either family or community; many of them even worked as farmers. Confirming this, DR AROLE said nearly 60 per cent of leprosy patients were successfully re-integrated in their community by following a village occupation. This removed the stigma attaching to leprosy and there were now very few victims of leprosy who lived as beggars. There was a daily examination of leprosy patients in each village.

SUMMARY

Mr Donald V. Wilson in the Chair

Summarizing the discussions so far, DR SLATER said the basic question had been the definition of 'appropriate technology'. Mr Brand saw it as the identification and use of what technology was available and Dr Cross did the same. Miss Levitt regarded it as the means of enabling the patient to walk upright and Mr Eaves as the means of rendering him socially and economically independent. By what criteria should technology be judged appropriate or otherwise? WHO focused on three: (i) its effectiveness in meeting the need and whether it was better than doing nothing; (ii) its cost in material and human resources, the delays, if any, involved in its use, etc.; (iii) its acceptability. The type of problem facing them in each case must be determined as well as its extent, as both would affect the type of technological solution to be adopted. So far as aids and appliances were concerned, the possibility of mass production had to be examined if this was required, as also the materials available, including substitute materials if necessary, and their appropriateness assessed in terms of cost and acceptability. There were two aspects to the question: the universal and the particular. Dr Morley and Professor Garst had been concerned with the responsibility for helping the individual while others were overall planners who had to deal in terms of numbers. The

appropriate technological solution was different in each case. When dealing with large numbers the answer had usually to be found in simple, low-cost solutions; in the case of rarer diseases a sophisticated, high-cost solution could be sought. The cost of services could usually be represented by an inverted triangle: the fewer people needed them the higher their cost. This posed a constant problem.

Acceptability must be judged from three aspects: the professional, the individual and the social. First, there was the choice as between function and cosmesis; then the use of familiar as opposed to alien materials; last, the level of sophistication of the community to which the patient belonged and which was particularly relevant to the choice of a prosthesis. In some communities, a patient who had lost a leg would be perfectly contented with a simple pylon that enabled him to walk; in others, a more sophisticated type would be demanded. The 'need' might well be defined differently by the doctor and the patient.

Turning to the delivery of services, **DR SLATER** said Dr Sankaran had described the approach from the top downwards while Mr Eaves had advocated initiatives at local level. Some countries had a large body of technicians which enabled delivery to be made at various levels with the help of local workers. What they had heard from Mr Brand had raised the question of the extent to which the transfer of technology, training and skills from one set of problems to another could provide another approach to the delivery of technology.

MR BRAND said most leprosy patients got on perfectly well with very simple shoes, made locally, which used material that could take the mould of the foot. There was no reason why similar products could not be made easily in the west if any uneducated village technician could make them provided the materials were available. Motor-car tyres provided a useful basic material although appliances made of them could not be fitted directly to the patient when a perfect fit was essential. There was a great deal of technology that could be by-passed in similar ways. Following a short discussion of different types of material and their availability, **DR KLOPPER** commented that every solution brought its own problems but people must not be afraid to experiment.

DR PFALTZGRAFF, with special reference to leprosy, spoke of the technician's duty to educate the community to understand the needs of the patient and the Chairman commented that community understanding was a point that almost every speaker had raised. **DR SLATER** added that it was one aspect of acceptability.

HEALTH CARE AND HUMAN DIGNITY: A SUBJECTIVE LOOK AT COMMUNITY-BASED RURAL HEALTH PROGRAMMES IN LATIN AMERICA

DAVID BRADFORD WERNER
Director, Hesperian Foundation, Palo Alto, California

Permit me to begin with an apology. Firstly, I am not a medical professional. Secondly, I have very little experience in innovative work relating to the care of crippled children. My experience lies in grass roots medicine in Latin America. For the past eleven years I have been involved in helping foster a primary health care network in a remote mountainous sector of western Mexico.

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During the past year, a number of my co-workers and I have visited and studied nearly forty rural health projects, both government and private, throughout Central America and northern South America (Mexico, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Ecuador, Colombia and Venezuela). Our interest in these programmes grew out of the widespread use of *Donde No Hay Doctor* as a training and work manual for primary health workers throughout Latin America. *Donde No Hay Doctor* (Where There is No Doctor) is a villagers' medical handbook which I initially wrote for use in our programme in the mountains of Mexico. Our objective in visiting the different rural health programmes has been to help foster a dialogue among the various groups, as well as to try to draw together many respective experiences, insights, methods and problems into a sort of field guide for health planners, so that we can all learn from one another's experience.

Therefore, rather than focus on crippled children, I would prefer, on this occasion, to look at rural communities, and to consider with you the ways in which existing health programmes help either to cripple communities or to make them whole.

The idea of a health care project or programme being a crippling force may come as a surprise. Yet, as I will try to clarify, to whatever extent a village health care service creates a one-way dependency on outside resources and directives, it becomes a crippler as well as a crutch to the community.

In Latin America, as elsewhere, modern medical practice has been a two-edged sword. Not long ago there were countless remote villages that, for better or worse, stood on their own. They had their own medicine men, midwives, bone-setters, tooth-pullers, psychic healers and priests. Life in these villages was at times hard and at times gentle, at times long, too often brief, but it was fairly much in balance. The village community was a more or less complete entity, largely self-sufficient with the pride, integration and dignity that come from self-reliance and self-direction. Then came that new magic, that new religion – western medicine – with its esoteric priesthood of university-trained doctors. Their renown and their wonder drugs, if not their physical presence, quickly spread to the most remote jungles and mountain valleys. In spite of attempts by the medical profession to legally sanctify its stronghold over prescription drugs, a clandestine market sprang up. Soon folk healers, bone-setters, midwives and mothers had added antibiotics, oxytocics and a range of other pharmaceuticals to their gamut of herbs and home remedies. A new breed of 'modern' folk healer, the *médico practicante*, or empirical doctor, arose, assuming in the villages the same role of self-made diagnostician and prescriber of drugs that the neighbourhood pharmacist assumed in the larger towns and cities. The magic of the injection held special power over people's imagination, and soon nearly every remote village had its *inyectadoras* or women who inject.

Needless to say, the abuse and misuse of modern medications by this army of empirical healers have been enormous (as, in fact, have been the misuse and overuse by the medical profession itself!). Yet the net impact on morbidity and mortality has been, at least from a short-sighted perspective, positive. With the introduction of antibiotics, antiparasitics, and to a lesser extent, vaccines, fewer children have died of infectious disease. As the population has correspondingly increased, the crippling impact of malnutrition has gone forth and multiplied. Under the growing pressures of population, the inequities of land tenure and distribution of wealth have become more oppressive. As a result, rural communities which once were self-sufficient and proud have come to depend more and more on outside help – for medication, for food supplements, for education, and – most degrading of all – for values and direction. In response to the growing plight of rural population,

the political/economic powers-that-be have assumed an increasingly paternalistic stand, under which the rural poor have become the politically voiceless recipients of both aid and exploitation.

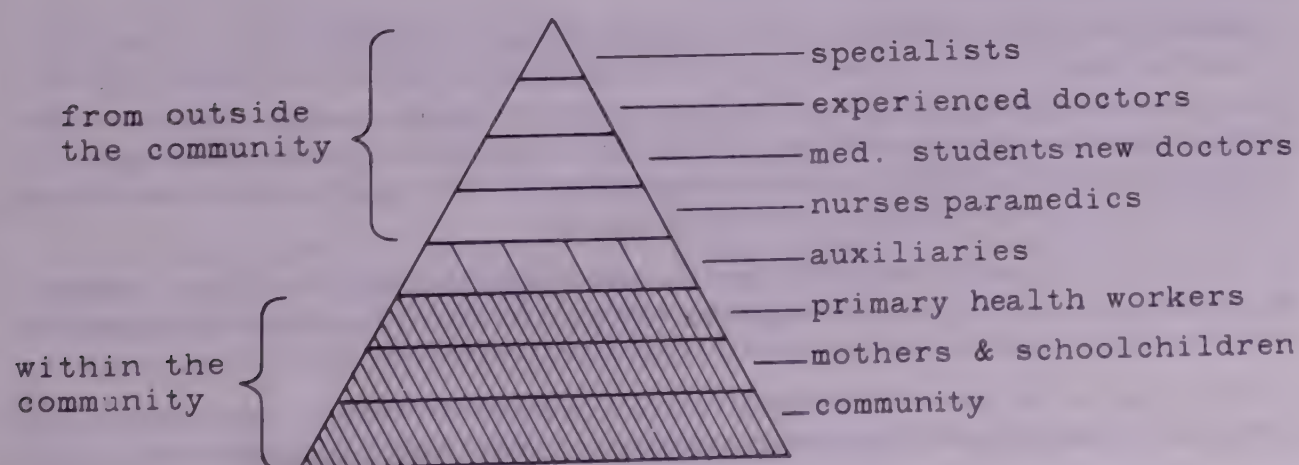
This state of concomitant *aid and exploitation* still dominates the health-care picture in much of Latin America today, as it does in many parts of the world. The medical empire has geared its services, its medicines and its hardware (even its textbooks) to such tremendous profits that it has in large part priced itself out of reach of the majority of the world's people – thus making subsidized services the only obvious alternative. Compounding this dependence on charity is the fact that in Latin America the professionals, although rarely willing to serve the communities where the needs are greatest or to work for an income that will truly serve rather than bleed such communities, have been notoriously reluctant to share their knowledge or rights-to-practise with members of the communities who are eager to learn and would willingly serve their people's health needs voluntarily or for modest remuneration.

When we asked the pioneers of rural health programmes we visited in Latin America what were the major obstacles to bringing effective health care to the people, the most common replies were 'doctors' and 'politics'.

However, over the past decade a change has been underway. There has been a general awakening, or at least the beginnings of an awakening, to the need for a more realistic, more truly equitable approach to health care. The trends which have been taking place in this recent renaissance of health care are summarized in Outline 1, page 88.

The overall trend, at least in theory, is from a fragmentary to a holistic (or whole-istic) approach to health care. It involves a shift from providing high-cost curative services to a select few, to providing low-cost preventative and curative services to as many of the people as possible – and ideally, to all. To do this, the concept of the health 'team' or skills pyramid has been introduced, of which the basic work force is composed of local, modestly-trained village health workers, often referred to as *promotores de salud* (health promoters). In some programmes the base level of the health team or pyramid is considered composed of mothers and schoolchildren – whose collaboration as health workers is fundamental – or the base line of the health team may be regarded as the community itself. Hence:

THE HEALTH PYRAMID



Perhaps one of the most important trends, but one we found actually happening in relatively few areas, is the effort to have more and more of the skills pyramid filled by local members of the rural community, and progressively less by outsiders. One programme in eastern Ecuador, working with the Shuar Indians, has set its goal to eventually replace all its field professionals – nurses, doctors, veterinarians, agronomists and even legal counsellors – with members of the Shuar community. The programme is providing the necessary scholarships and encouragement. Whether or not the chosen few, once they get their degrees, will return to their villages and work for the modest earnings the communities can afford, is yet to be seen. Unfortunately our formal education systems do far more to wean people away from their rural communities than to prepare them for staying there. New ways need to be explored, and new education schemes designed, which will allow villagers to increase their knowledge and skills to professional levels *without* tearing them away from their communities.

As is indicated in Outline 1 under 'Focus of Action', there has been a trend in rural health care not only from curative toward preventive medicine, but, by taking into account the causes behind the causes of poor health, toward the integration of health care with other aspects of community development. Hence the most recent trend is now to include health care as but one sector of an integrated development programme, which also covers education, community leadership, agricultural extension, communications and marketing improvements, intermediate technology, etc. In fact, some of the most exciting work we saw, with the greatest impact on the health and vitality of the communities involved, had its major thrust in agricultural extension rather than on health care *per se*. In one programme in Guatemala, sponsored by Oxfam and World Neighbours and focusing on agricultural extension, the resultant increase in food production not only directly improved the nutrition and health of the people, but generated an income which permitted the community to cover costs of other improvements rather than to be dependent on outside help.

If integrated development is to be taken seriously, and if the programme is really trying to confront the underlying issues which affect the health, well-being and future of the community, it must, of course, take into consideration the socio-political situation, including the influence of paternalism and exploitation on the community. Such considerations have led some rural health programmes to work with group dynamics to promote *concientización* or social awareness and to become involved with land and social reform. However, many of the groups we visited in Latin America would have nothing at all to do with such politically 'hot' issues – either because they didn't dare to, or because, for obvious reasons, they didn't care to.

However, even if a programme does not touch upon issues of land reform or social justice, even if it does not hold classes in *concientización*, if it is truly trying to help the community stand on its own feet, issues of social injustice and land inequity will eventually come up, if they are indeed limiting factors to community well-being. This can be a serious consideration in nations where 10 per cent of the people own 90 per cent of the land and wealth. And it can be a serious consideration for foreign or international health or development agencies.

Perhaps the key question, then, is whether the outside agent-of-change, or sponsor – whether it be a private, religious or governmental group, whether it be domestic, foreign or international – really wants to or can afford to have the rural community stand on its own feet.

As indicated at the bottom of Outline 1, another of the recent trends in rural health care has been a shift from many small pilot projects operating in circumscribed geographic areas, to large

regional or even national programmes. Many of the early attempts at community-based health care, including the training of village health workers, were conducted under the auspices of private or religious groups, many of them 'expatriate' (American, Canadian, British, German, etc.). Throughout Latin America there has been a proliferation of these 'pilot projects', some of them successful and enduring, others appearing and disappearing, here and there, like fireflies. Often there has been a lack of communication even between nearby projects, and sometimes a not-so-healthy competition. However, some of the most exciting and effective community activity we observed is being fostered by small non-government projects. One of the key questions today is if and how such activity can be replicated to reach more people. As one programme adviser put it, 'We've had enough pilot projects. It's time we stopped reinventing the wheel and got busy helping it to roll!'

And so we find that on the heels of the private and religious projects, and sometimes nipping at their heels, has come a wave of regional or national projects administrated by respective Ministries of Health. Today nearly all the countries of Middle and South America are engaged in launching or expanding 'community-based' rural health programmes incorporating the use of village health workers and, often, traditional midwives.

Surprising similarities exist in the format and structural details of many of these different government health programmes – surprising until one realizes that these Ministry of Health programmes are, for the most part, aided and monitored by the same small complex of foreign and international agencies: WHO/PAHO, AID, IDRC, IDB, UNICEF, FAO, Millbank Foundation, Rockefeller Foundation, etc. Often, a single health or integrated-development programme will have financial or advisory input from as many as three or four of the above agencies or foundations.

An entire jargon has evolved for those who are 'hip' on community-based rural health care. From country to country one hears identical motifs, e.g., 'Primary decision making by the members of the community', 'Response to the felt needs of the community', 'The primary health worker chosen by the members of his community', 'Priorities must be determined by the community itself'. The ideas behind these axioms are, of course, fundamental. But too often they are as foreign to the communities they are aimed at as to the health ministries on which they have been superimposed. If there were a little less rhetoric behind these slogans and a little more reality, the state of rural health care in Latin America might be far better off than it is today.

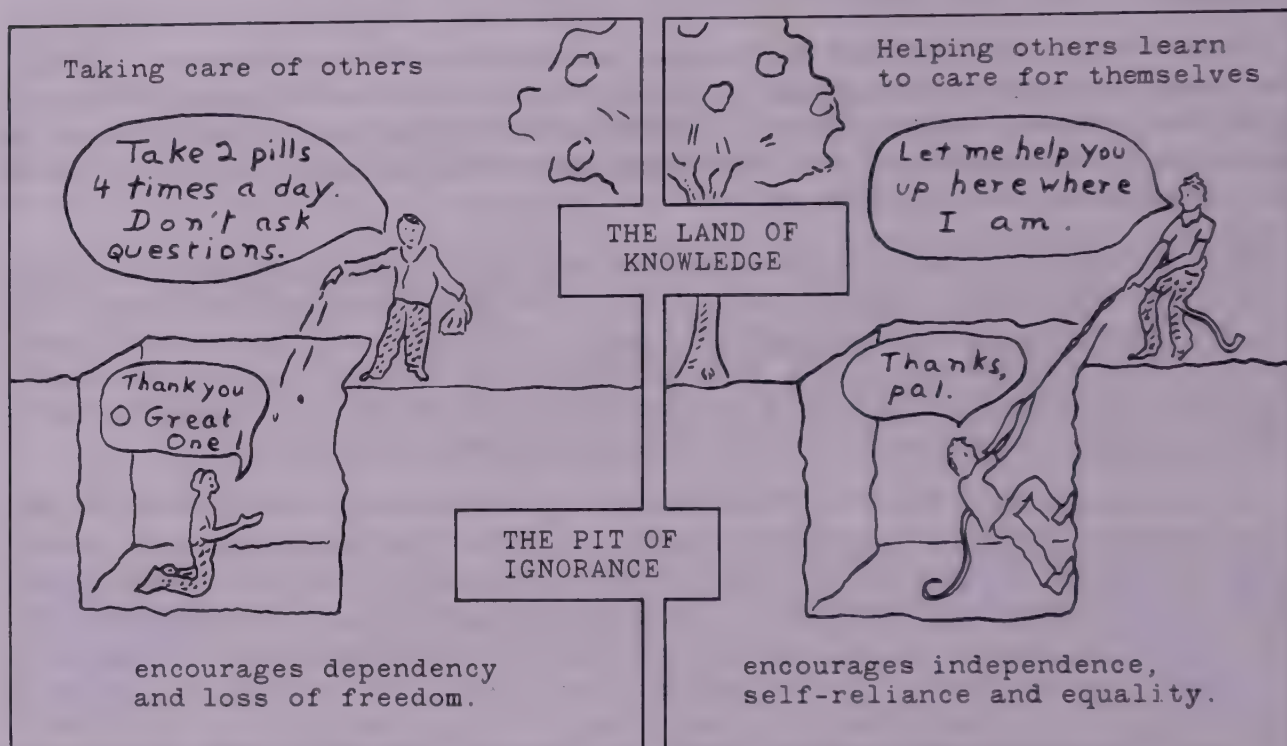
In our travels through Latin America we were struck by the fact that often the policies or activities of the many different health programmes we visited tended to fall somewhere along a continuum between two diametrically opposing poles:

1. *Community supportive* – those which favourably influence the long-range welfare of the community, that help it stand on its own feet, that genuinely encourage responsibility, initiative, primary decision making and self-reliance at the community level, that build upon human dignity.
2. *Community oppressive* – those which, while perhaps giving lip service to the above aspects of community input, are fundamentally paternalistic, or are structured and carried out in such a way that they actually encourage greater dependency, servility and unquestioning acceptance of outside regulations and decisions; those which, in the long run, are crippling to the dynamics of the community.

In Outline 2, page 89, I have tried to summarize some of the different features of rural health

programmes, and to point out the various approaches which tend to make each feature community supportive or community oppressive. I do not ask that everyone necessarily agree with me on every aspect. Often the differences in approaches turn on 'human' factors such as dignity and caring, which are often hard to measure yet are, in my belief, immeasurably important. This outline, then, is intended primarily as a guide (or perhaps goad) to stimulate those involved in the planning or process of rural health care to think through each aspect of their programme and policies in terms of what may ultimately be for the good of the community.

THE TWO APPROACHES TO HEALTH CARE



Outline 2 is lengthy, and rather than review it in the text of this presentation, I would encourage you to look it through and, at the close of my talk, ask any questions that come to mind.

Needless to say, no health or development programme will explicitly profess to be community oppressive. Nor, in any of the programmes we visited, did we encounter any in which every aspect was either community oppressive or community supportive. In each there was a mixture of strengths and weaknesses – as is indeed human.

However, it is interesting, and I think somewhat disturbing, to observe that, with some notable exceptions, the programmes which in general we found to be more community supportive were small, private, or at least non-governmental programmes, usually operating on a shoestring and with a more or less *sub rosa* status.

For all their international funding, for all their highly trained (and highly paid) advisory personnel, for all their glossy bilingual brochures describing community participation, we found that

when it came to the nitty-gritty of what was going on in the field, many of the ambitious regional or national programmes co-ordinated by Ministries of Health or other governmental agencies actually had a minimum of effective community participation and a maximum of handouts, paternalism and superimposed, initiative-destroying 'norms'.

Perhaps the biggest challenge today concerning rural health care is: How can more people be effectively reached? Or to put it more explicitly: *How can the community-supportive features of outstanding small, private, non-governmental pilot projects be adapted for regional or national outreach?*

Attempts have been made. Results have, at best, been only partially successful.

I would like to explore briefly some of the steps which are being taken, or might be taken, to implement a regional or national approach to rural health care that is genuinely community supportive. To do this, it is necessary first to focus on some of the major obstacles or limiting factors.

Limiting Factors in the Evolution of a Community-Supportive Health Care System

1. *Attitudes*

It has often been said, in community health work, that modifications which require changes in attitude or in the traditional way of doing things are those which are accomplished most slowly and require the most time and patience. Usually, such statements are made in reference to villagers or the marginally educated, but as many pioneers of rural health care alternatives will testify, those whose attitudes and traditional approach are most difficult to modify are not the villagers but the professionals. Many of the regional or national health care programmes which 'draft' young doctors or nurses find many of them unable or unwilling to adapt to working supportively with para-medics and village health workers. They feel inadequate in a rural setting. Their training not only does not prepare them for such involvement, it actually conditions them against it.

As an example, let me mention to you two classes of medical students, one first year and one fourth year, who were taken on separate occasions to visit an outstanding regional rural health programme in Costa Rica. The first-year medical students were so enthusiastic about the director's description of the programme, with its 'health circuses' and its community built and operated health posts, that they questioned him for hours and finished with a standing ovation. By contrast, the fourth-year students who visited were clearly bored, asked almost no questions, and drove back to the city as soon as they could, without even bothering to visit any of the health posts. These budding M.D.s seemed to feel themselves above primary care or community involvement. Their skills, and their concern, clearly related to sickness – not health!

Obviously, if doctors are to become part of a rural health team, their schooling must be radically different. It must have a different content and a new set of values, with more emphasis on health and on communities and less on sickness of isolated cases. It must teach the doctor-to-be that his knowledge is not sacrosanct, and that his first duty is to share it. It must help him to be humble. Some of the medical schools in Latin America are trying to work toward these changes. But many administrators and professors are still firmly set in their attitudes. It will take a long time.

2. *Hazardous emphasis on safety*

This again has to do with traditional attitudes. There seems to be a tremendous reluctance on the part of health care professionals to teach or permit village health workers to do very much in the

way of diagnosis and treatment of common disease. Many programmes limit the curative role of their health workers to the symptomatic treatment of three or four problems, such as 'fever', 'simple diarrhoea', 'cough' and perhaps 'worms'. Except for aspirin and maybe piperazine, the medicines they are permitted to use have little or no clinical value. But, as is pointed out, they are 'safe'. Such programmes seem to ignore the fact that village stores where the health workers live sell over the counter a wide range of drugs—everything from chloramphenicol to vitamin B12 and pitocin—which are commonly used and misused by the people. Yet because these drugs are 'dangerous' the health worker is taught nothing about them—neither their uses, nor their misuses, nor their risks. What is more, the village worker's minimal knowledge of medicine, in a community where many medicines are widely used, reduces the people's respect for him and makes him less effective, even in preventive measures. In villages with these minimally-trained health workers, we found that many more people used the services of *curanderos*, herb doctors and *médicos practicantes* than sought assistance from the health worker.

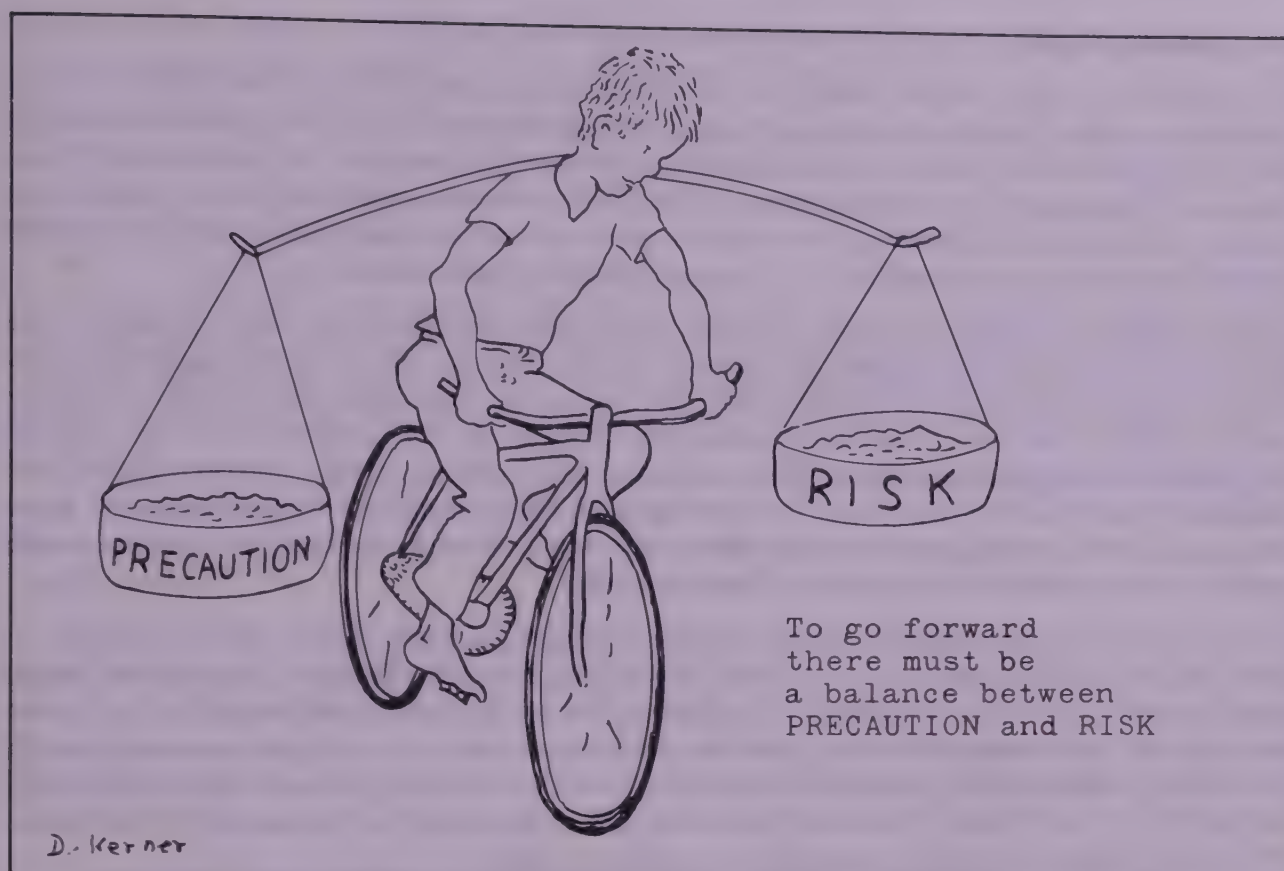
In Colombia, a health officer told us of a village worker, or *promotora*, who, at a time when the rivers were in flood and all transportation was cut off, was called to see a child with acute pneumonia. The health worker desperately thumbed through her Manual of Norms. But the only instruction under 'Fever with cough and difficulty breathing' was 'Refer patient to doctor'. This being impossible at the time, she referred the child to the local shopkeeper, who at once injected the youngster with penicillin. Fortunately, the child responded.

I asked the health officer if perhaps *promotoras* working in such isolated areas should not be taught something about pneumonia and the use of penicillin, or at least be given a simple reference book where they could look such things up. She replied that, officially, the health department's policy was that village health workers administer antibiotics only with a doctor's prescription . . . and that it would 'not be good for the *promotoras*' to have a reference book explaining things to them 'outside the norms'.

To give another example, in many programmes we found that, although village health workers were taught how to attend a normal childbirth, for post-partum haemorrhage their only instruction was, once again, to refer the patient to a doctor. Both uterine massage and use of ergotamine were considered 'too risky'. For health workers living hours or days away from health centres, such over-precaution could, and surely has, cost many lives.

Basically, what we often found lacking on the part of the planners of large health programmes was a realistic perception of what really goes on in the villages. Time and again we found that primary health workers were taught and permitted to do far less medically than the villagers were already doing for themselves.

By contrast, many of the leaders of smaller rural health programmes seemed to have a much better comprehension of village life, as well as greater appreciation for the intelligence and potential of their village health workers. While helping their health workers recognize and work within their limitations, they trained them in a far wider range of skills. As a result, the health workers in these programmes were more challenged, worked with greater pride and enthusiasm, and, because of their greater knowledge and skill, had the fuller confidence of their communities.



A programme which is truly community supportive, it would seem, must help and encourage both the village health workers and their communities to learn and function to their full potential. To do this involves certain risks. A programme can proceed forward only when there is a balance between precaution and risk. Programmes which are top-heavy with precautions get nowhere.

3. *Bureaucracy*

Bureaucracy is the hobgoblin of giant programmes! Red tape, excess paperwork, waste motion, wasted money, inefficiency, poor communications and ultimately graft and corruption seem to inevitably enter into the picture when operations get too big. The very large regional or national programmes we visited characteristically suffered from breakdowns in communications, supervision and supplies, sometimes to the point where health workers become totally ineffective. One regional programme we visited in southern Mexico was so out of touch between office and village that it was still sending paychecks to a community worker who six months before had moved to another area and was collecting another salary from the Forestry Department.

The question is, how do you regionalize or nationalize a rural health programme without bogging down the programme with bureaucracy? For the answer, which is by no means easy, I think we might look to E. F. Schumacher's *Small is Beautiful*,¹ and consider decentralization. The role of the Ministry of Health could be to co-ordinate and advise rather than to control and restrict. This would be true at all the intermediate levels down to the community itself. At every level, the maximum amount of self-sufficiency and self-direction would be encouraged. This would not only decrease bureaucracy, but increase personal involvement and responsibility at every level.

4. Commercialization

In Honduras an open-minded director of one of the regional health programmes referred us to a *curandero* or native herb doctor who was famous through the area for his healing powers. His fame for curing patients who had not found relief with doctors had grown to the point where he was invited to Tegucigalpa by a representative of the Health Ministry, who asked him, among other things, why it was that with his people modern medicine was so often ineffective. The herbalist replied, '*Porque lo han comercializado!*' – because they have commercialized it!

The problem of commercialization of health care is many faceted. It has often amused me, the way in which some of the big health programme officials, many of whom receive salaries twenty to thirty times that of the average villager, talk to a community about how important it is that the village health worker be voluntary, working for the joy of serving others and the personal satisfaction that he gains from serving his community. These officials always seem so surprised and disillusioned to discover that a health worker has been selling medicines that are supposed to be free, or otherwise turning 'service to the community' into a lucrative business. In truth, the health worker is merely following the example of his role model.

Here again, in many of the smaller private programmes, where many of the outsiders – sometimes even the doctors – are voluntary or working for minimal wages, it rings truer when people speak of service for the joy of it. In general, doctors and other professionals not only cost too much for rural communities, they earn too much to serve as role models in community health programmes which would purport to be equitable. I can see no getting around this problem until we can foster a new breed of medical practitioner, who comes from the community he will serve, and who is willing to serve his community for modest earnings.

The other side of the commercialization of medicine, namely the flagrant overpricing and false promotion of pharmaceuticals, I will only touch upon. The alarming facts are painstakingly disclosed in Milton Silverman's new publication, *The Drugging of the Americas*,² and in other writings. Beyond doubt, the unnecessarily high cost of critical medications is one of the major obstacles to the financial self-sufficiency of community-based health services. Honduras and Peru have begun their own production and low-cost distribution of basic medicines. Other countries should follow suit. I might also dare to suggest that if the international health agencies really wanted to give a boost to developing countries, rather than hand out free medicines, they would pressure for fair pricing of drugs by the multinational corporations, for amendments of drug patent laws, and other measures to bring medicines to their users, not free, but at a price nearer the cost of production. (In case anyone thinks this would make a small difference, I might mention that the hidden profits on Valium, for instance, in Colombia have run to more than 6,000 per cent.)³

The commercialization of medicine, and legitimized exploitation of man by man, may require a major social change. Yet the problem exists and cannot be ignored. Equitable health care at the village level will surely remain a pipe dream in countries where medicine as a whole is such a lucrative business.

5. Politics

I have already mentioned that politics are considered one of the major obstacles to a community-supportive health care programme. This can be as true for village politics as for national politics.

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However, the politico-economic structure of the country must necessarily influence the extent to which a rural health programme is community supportive or not.

Let us consider the implications in the training and function of a village health worker. If the village health worker is taught a respectable range of skills, if he is encouraged to think, to take initiative and to keep learning on his own, if his judgement is respected, if his limits are determined by what he knows and can do, if his supervision is supportive and educational, chances are he will work with energy and dedication, will make a tremendous contribution to his community and will win his people's confidence and love. His example will serve as a role model to his neighbours, that they too can learn new skills and assume new responsibilities, that self-improvement is possible. Thus the village health worker becomes an internal agent-of-change, not only for health care, but for the awakening of his people to their human potential . . . and ultimately to their human rights.

Yet in countries where social and land reforms are sorely needed, where oppression of the poor and gross disparity of wealth are taken for granted, it is possible that the health worker I have described knows and does and thinks too much. Such men are dangerous! They are the germ of social change.

So we find, in certain health programmes, a different breed of village health worker . . . one who is taught a pathetically limited range of skills, who is trained not to think, but to follow a list of very specific instructions or 'norms', who has a uniform, a handsome diploma and who works in a standardized cement block health post, whose supervision is restrictive and whose limitations are predefined. Such a health worker has a limited impact on health, and even less on the growth of the community. She spends much of her time filling out forms.

I would not like to assert that there are necessarily political motivations behind the shaping of either one or the other of these two types of health workers. Perhaps there are other reasons why national and regional programmes so often generate the second, more subservient type. Nevertheless, governments in countries with enormous inequities in land ownership, earnings and wealth must necessarily think twice before backing, or even tolerating rural health or development projects that are community supportive in the fullest sense.

I'm afraid I don't have any easy answer to the problem of politics. Yet political factors do influence both health and health care in ways we can ill afford to ignore. It behoves those agencies, foundations and individuals that are truly interested in community-supportive action to take a careful look at some of the recent trends and what is really going on.

Before closing, I would like to summarize some of the steps that are actually being taken, or might be taken, to implement a regional or national approach to rural health care which is genuinely community supportive.

1. *Decentralization.* This includes relative autonomy at every level. Advice and co-ordination from the top. Planning and self-direction from the bottom.

2. *Open-ended planning.* In spite of much talk about primary decision making by the community, often a programme's objectives and details have been meticulously planned in advance. If the community's felt needs are truly to be taken into account, programme plans must be open-ended and flexible.

3. *Allowance for variation and growth.* If the programme is to evolve, alternatives must be

tried and compared. Trial of new approaches and methods should be encouraged. Private or non-government programmes should be observed and learned from, not forced to conform or stamped out.

4. *Deprofessionalization.* More training, involvement and responsibility for villagers themselves. Continuing education opportunities for villagers which support their staying in and serving their communities.

5. *Greater communication between desk workers and field workers.* It is especially important that all levels of workers, from community members to top officials, be present at and participate in policy-planning or changing meetings.

6. *More self-sufficiency at the village level.* The more the community itself can carry the weight of its own health programme, both in cost and personnel, the less paralysed it will be by breakdowns in supply and communications from the parent agency.

7. *More curative medicine.* For a long time all health care experts have been pushing for more preventive medicine at the village level – and with good reason. However, the villagers' felt need has consistently been for curative care. If health workers are to have the respect and confidence of their people, they should be trained and permitted to diagnose and treat more of the common problems – especially those when referral without initial treatment increases the danger for the patient.

8. *More feedback between doctors and health workers.* When health workers refer patients to a doctor, the doctor should *always* provide feedback to the health worker, explaining in clear detail and simple language about the case. This can and should be an important part of the health worker's continuing education. To get doctors to do this will require a great deal of supportive supervision.

9. *Earlier orientation of medical students.* From the very beginning of their training, medical students should be involved in community health, and encouraged to learn from experienced village health workers and paramedics.

10. *Greater appreciation and respect for villagers, their tradition, their skills, their intelligence, and their potential.* Villagers, and especially village health workers, are often treated like children or ignoramuses by their more highly educated trainers and supervisors. This is a great mistake. People with very little formal education often have wisdom, skills and powers of observation which academicians have never acquired and therefore fail to perceive. If this native knowledge and skill is appreciated, and integrated into the health care process, this will not only make a programme more truly community oriented and viable, but will help preserve the individual strengths and dignity of the health worker and his people. I cannot emphasize enough how important it is that rural health programme planners, instructors and supervisors be 'tuned in' to the capabilities and special strengths of the people they work with.

11. *That the directors and key personnel in the programme be people who are human.* This is the last, most subjective and perhaps most important point I want to make. Let me illustrate it with an example:

In Costa Rica there is a regional programme of rural health under the auspices of the Health Ministry, which differs in important ways from the rural health system in the country as a whole.

This regional programme has enthusiastic community participation and has had a remarkable impact on overall health. It may well have the lowest incidence of child and maternal mortality in rural Latin America. Its director is a paediatrician and a poet, as well as one of the warmest and hardest working people I have met. The day I accompanied him on his trip to a half-dozen village health posts we didn't stop for lunch, because he was so eager to get to the last post before night fell. He assumed I was just as eager. And I was; his enthusiasm was that contagious!

I will never forget our arrival at one of the posts. It was the day of an 'under-fives' clinic. Mothers and patients were gathered on the porch of the modest building. As we approached, the doctor began to introduce me, explaining that I worked with a rural health programme in Mexico and was the author of *Donde No Hay Doctor*. Frantically, I looked this way and that for the health worker or nurse to whom I was being introduced. As persons began to move forward to greet me, I suddenly realized he was introducing me to *all the people*, as he would to his family. Obviously he cared for the villagers, respected them, and felt on the same level with them.

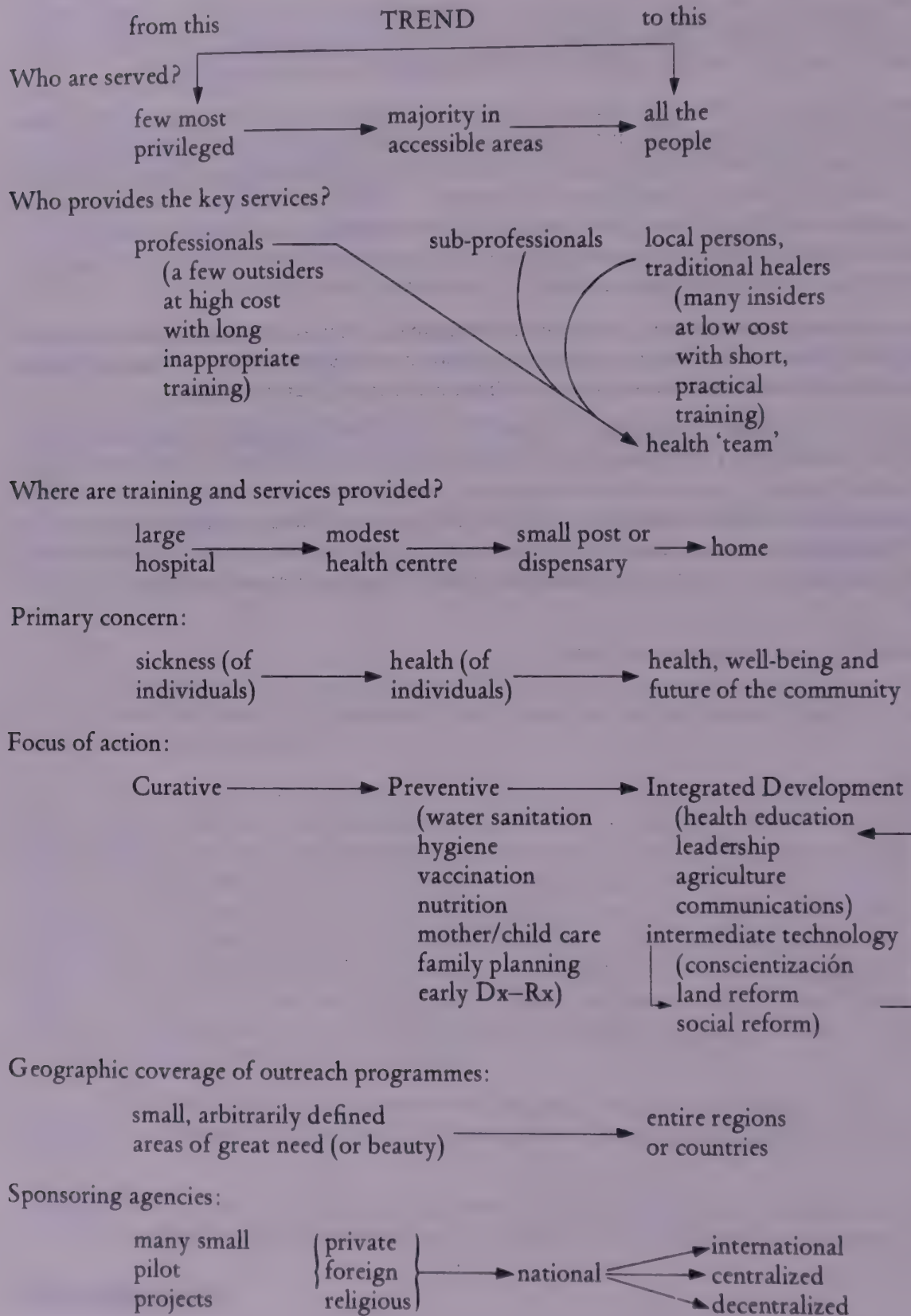
This was a new experience for me. I was used to being marched past the waiting lines of patients and being introduced to the health worker, who was instructed to show me around and answer my questions while the patient whose consultation had been interrupted silently waited.

'This man is an exception!' I thought to myself. In our visits throughout Latin America, we found almost invariably that the outstanding programmes have one or two key people who were exceptional human beings – persons who were capable, humble, dedicated and who, above all, had the highest regard for the dignity and worth of their fellow man. These people attract others like themselves. And the genuine concern of people for people, of joy in doing a job well, of a sense of service, permeates the entire programme clear down to the village worker and members of the community itself.

People are what make a programme work.

Outline 1

RECENT TRENDS OF RURAL HEALTH CARE PROGRAMMES



Outline 2

RURAL HEALTH PROGRAMS IN LATIN AMERICA: TWO APPROACHES

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Initial objectives	Open-ended. Flexible. Consider community's felt needs. Include non-measurable (human) factors.	Closed. Pre-defined before community is consulted. Designed for hard-data evaluation only.
Size of programme	Small, or if large, effectively decentralized so that sub-programmes in each area have the authority to run their own affairs, make major decisions, and adjust to local needs.	Large. Often of state or national dimension. Top-heavy with bureaucracy, red tape, filling out forms. Superstructure overpowers infrastructure. Frequent breakdown in communication.
Planning, priorities, and decision making	Strong community participation. Outside agents-of-change inspire, advise, demonstrate, but do not make unilateral decisions.	Theoretically, community participation is great. In fact, activities and decisions are dominated or manipulated extensively by outsiders, often expatriate 'consultants'.
Financing and supplies	Largely from the community. Self-help is encouraged. Outside input is minimal or on the basis of 'seed funds', matching funds, or loans. Agricultural extension and other activities which lead to financial self-sufficiency are promoted. Low-cost sources of medicine are arranged.	Many giveaways and handouts: free food supplements, free medicines, villagers paid for working on 'community projects'. Village health worker (V.H.W.) salaried from outside. Indefinite dependency on external sources.

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Way in which community participation is achieved	<p>With time, patience, and genuine concern. Agent-of-change lives with the people at their level, gets to know them, and establishes close relationships, mutual confidence and trust.</p> <p>Care is taken not to start with free services or giveaways that cannot be continued.</p>	<p>With money and giveaways. Agents-of-change visit briefly and intermittently, and later on discover that, in spite of their idealistic plans, they have to 'buy' community participation.</p> <p>Many programmes start with free medicines and handouts to 'get off to a good start', and later begin to charge. This causes great resentment on the part of the people.</p>
Data and evaluation	<p>Underemphasized. Data gathering kept simple and minimal, collected by members of the community. Includes questions about the people's felt needs and concerns.</p> <p>Simple scheme for self-evaluation of workers and programme at all levels. Evaluation includes subjective human factors as well as 'hard data'.</p>	<p>Overemphasized. Data gathered by outsiders. Members of the community may resent the inquisition, or feel they are guinea pigs or 'statistics'.</p> <p>Evaluation based mainly on 'hard data' in reference to initial objectives.</p>
Experience and background of outside agents-of-change	Much practical field experience. Often not highly 'qualified' (degrees).	Much desk and conference room experience. Often highly 'qualified' (degrees).
Income, standard of living, and character of outside agents-of-change. (M.D.s, nurses, social workers, consultants, etc.)	Modest. Often volunteers who live and dress simply, at the level of the people. Obviously they work through dedication, and inspire village workers to do likewise.	Often high, at least in comparison with the villagers and V.H.W. (who, observing this, often finds ways to 'pad' his income, and may become corrupt). The health professionals have often been drafted into 'social service' and are resentful.

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Sharing of knowledge and skills	At each level, from doctor to V.H.W. to mother, a person's first responsibility is to teach – to share as much of his knowledge as he can with those who know less and want to learn more.	At each level of the preordained medical hierarchy (health team) a body of specific knowledge is jealously guarded and is considered dangerous for those at 'lower' levels.
Regard for the people's customs and traditional folk healing, use of folk healers	Respect for local tradition. Attempt to integrate traditional and Western healing. Folk healers incorporated into the programme.	Much talk of integrating traditional and Western healing, but little attempt. Lack of respect for local tradition. Folk healers not used or respected.
Scope of clinical activities (Dx, Rx) performed by V.H.W.	Determined realistically, in response to community needs, distance from health centre, etc.	Delimited by outsiders who reduce the curative role of the V.H.W. to a bare minimum, and permit his use of only a small number of 'harmless' (and often useless) medicines.
Selection of V.H.W. and health committee	V.H.W. is from and is chosen by community. Care is taken that the entire community is not only consulted, but is informed sufficiently so as to select wisely. Educational prerequisites are flexible.	V.H.W. ostensibly chosen by the community. In fact, often chosen by a village power group, preacher, or outsider. Often the primary health worker is himself an outsider. Educational prerequisites fixed and often unrealistically high.
Training of V.H.W.	Includes the scientific approach to problem solving. Initiative and thinking are encouraged.	V.H.W. taught to mechanically follow inflexible, restrictive 'norms' and instructions. Encouraged <i>not</i> to think and not to question the 'system'.

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Does the programme include 'concientización' (consciousness raising) with respect to human rights, land and social reform?	Yes (if it dares).	Issues of social inequities, and especially land reform are often avoided or glossed over.
Manual or guidebook for V.H.W.	<p>Simple and informative in language, illustrations, and content. Geared to the user's interest. Clear index and vocabulary included. All common problems covered. Folk beliefs and common use and misuse of medicines discussed. Abundant illustrations incorporated into the text. The same time and care was taken in preparing illustrations and layout as villagers take in their artwork and handicraft.</p> <p>Manual contains a balance of curative, preventive, and promotive information.</p>	<p>Cookbook-style, unattractive. Pure instructions. No index or vocabulary. Language either unnecessarily complex or childish, or both. Illustrations are few, inappropriate (cartoons), or carelessly done. Not integrated with the text. Useful information is very limited, and some of it inaccurate. Many common problems not dealt with. May use misleading and/or incomprehensible flow charts.</p> <p>Manual often strong on preventive and weak on curative information; overloaded with how to fill out endless forms.</p>
Limits defining what a V.H.W. can do	<i>Intrinsic.</i> Determined by the demonstrable knowledge and skills of each V.H.W., and modified to allow for new knowledge and skill which is continually fostered and encouraged.	<i>Extrinsic.</i> Rigidly and immutably delimited by outside authorities. Often these imposed limits fall far short of the V.H.W.'s interest and potential. Little opportunity for growth.

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Supervision	Supportive. Dependable. Includes further training. Supervisor stays in the background and never 'takes over'. Reinforces community's confidence in its local workers.	Restrictive, nit-picking, authoritarian, or paternalistic. Often undependable. If supervisor is a doctor or nurse he/she often 'takes over', sees patients, and lowers community's confidence in its local worker.
Encouragement of self-learning outside of norms	Yes. V.H.W.s are provided with information and books to increase knowledge on their own.	No! V.H.W.s are not permitted to have books providing information outside their 'norms'.
Feedback on referred patients (counter-reference)	When patients are referred by the V.H.W. or auxiliary, the M.D. or other staff at the referral centre gives ample feedback to further the health worker's training.	Doctor at the referral centre gives no feedback other than instructions for injecting a medicine he has prescribed.
Flow of supplies	Dependable.	Undependable.
Profit from medicines (in programmes that charge)	V.H.W. sells medicines at his cost which is posted in public. (He may charge a small fee for services rendered.) Use of medicines is kept at a minimum.	V.H.W. makes a modest (or not so modest) profit on sale of medicines. This may be his only income for services, inviting gross overprescribing of medicines.
Evolution toward greater community involvement	As V.H.W.s and community members gain experience and receive additional training, they move into roles initially filled by outsiders – training, supervision, management, conducting of under-fives clinics, etc. More and more of the skill pyramid is progressively filled by members of the community.	Little allowance is made for growth of individual members of the community to fill more and more responsible positions (unless they graduate to jobs <i>outside</i> the community). Outsiders perpetually perform activities that villagers could learn.

	<i>Community Supportive</i>	<i>Community Oppressive (crippling)</i>
Openness to growth and change in programme structure	New approaches and possible improvements are sought and encouraged. Allowance is made for trying out alternatives in a part of the programme area, with the prospects of wider application if it works.	Entire programme is standardized with little allowance for growth or trial of ways for possibly doing things better. Hence there is no built-in way to evolve toward better meeting the community's needs. It is static.
Results:	<p>Health worker continues to learn and to grow. Takes pride in his work. Has initiative. Serves the community's felt needs. Shows villagers what one of their own can learn and do, stimulating initiative and responsibility in others.</p> <p>Community becomes more self-sufficient and self-confident.</p> <p>Human dignity and responsibility grow.</p>	<p>Health worker plods along obediently – or quits. He/she fulfils few of the community's felt needs. Is subservient and perhaps mercenary. Reinforces the role of dependency and unquestioning servility.</p> <p>Community becomes more dependent on paternalistic outside charity and control.</p> <p>Human dignity fades. Traditions are lost. Values and responsibility degenerate.</p>
If outside support fails or is discontinued . . .	Health programme continues because it has become the community's.	Health programme flops.
Tacit objective	Social reform – health and equal opportunity for all.	'Don't rock the boat.' Put a patch on the underlying social problems – don't resolve them!
Sponsoring agencies (There are notable exceptions)	Often small private, religious, or volunteer groups. Sometimes sponsored by foreign non-government organizations.	Often large regional or national programmes co-sponsored by foreign national or multinational corporate or government organizations.

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DISCUSSION

DR WERNER said one aspect of his work consisted in trying to foster communication between different groups. The chief points in his report that he wished to emphasize were the following. As his own experience lay in Central America it was from those countries that he drew his information and conclusions. Villages used to stand on their own, relying on their own medicine men, midwives, priests and others for help in illness and other crises. The situation had changed with the introduction of western medicine which had, to some extent, improved medical care but had not proved an unmixed blessing. Apart from the misuse of drugs – not confined to Latin American countries – the very fact that their correct use had reduced child mortality from infectious diseases meant that the population had increased and, with it, came an increase in malnutrition. For the same reason, the unequal distribution of land and wealth had become more oppressive, the final result being that communities that had been proud and independent were coming to depend more and more on outside help which could be a crippling process. They were also apt to be exploited. The many drugs now available were sold at exorbitant prices and most doctors took little interest in the rural districts. There were two kinds of health care, one supportive and the other oppressive.

Most supportive help came from non-governmental sources and was directed to showing people how to cope more adequately with their own needs. While it was hard to change the established attitudes of the medical profession, students ought to be taught that the knowledge they were acquiring was not sacrosanct but that their first duty was to share it. As he knew from experience, village health workers, if properly trained, could learn how to diagnose and treat common diseases. They should not, as was so frequently the case in Central America, be forbidden to go beyond their 'Manual of Norms' even if this meant leaving the patient to die because there was no doctor near enough to summon. The risk to patients was decreased by giving increased responsibility to non-professional health workers and to the patient's own families, provided the necessary preliminary training had been given them.

Large national or international programmes were apt to get bogged down in red tape and DR WERNER suggested that the answer to this was decentralization and encouragement of the maximum amount of self-sufficiency and self-direction at every level. He also advocated what he called the 'planned obsolescence' of outside influence and the setting of a 'cut-off' date for aid from outside sources. The idea of the 'delivery' of medical services should be abandoned in favour of that of 'informed self-care'.

The importance of curative care should not be underestimated as that was the villagers' own felt need. Only when the health workers had gained their respect and confidence by treating their current ailments could they hope to introduce the idea of preventive treatment with any success. Curative care did not mean making greater use of medicines – often the contrary – but making more informed use of them. The place of the trained doctor was not, as DR WERNER described it, 'on

top' but 'on tap'; to visit regularly and be available in emergencies but to leave his health workers to shoulder the full responsibility which they had been trained to take. It was a great mistake to think an illiterate person less capable of training and responsibility than a literate one and the village health workers were not to be regarded as second-best substitutes for the doctor; within the limits of their training they were as good as a doctor and he himself would always trust his village workers to treat such diseases as, for example, diarrhoea.

From the very beginning of their training medical students should be involved in community health work, as had already been insisted on by earlier speakers. They should also be encouraged to see their future work as lying in the rural areas as much as, or more than, in the towns, as well as to learn from experienced village health workers and paramedics.

Later in the morning, DR WERNER showed a film of his work in Mexico which illustrated a number of the points he had made. He showed local health workers who had been trained in simple surgery and dentistry carrying out their own operations most successfully. Moreover, he said the traditional local remedies were by no means all either harmful or useless and he instanced the use of catfish oil for burns, the tigridia lily for headaches, etc. They also knew how to use the leaves of a local tree to make casts for broken limbs which were perfectly adequate, although there was a danger of making them too tight which in many cases led to gangrene and the loss of the limb in question. Some remedies were, of course, disastrous but it was important to recognize what was good and useful in the traditional remedies and to accept it and, in cases where such remedies, if not useful were at least not actively harmful, to try to graft more modern and efficacious practices on to them. For instance, he still encouraged the people to make their own casts for broken limbs but with the help of the village worker. It was important to help people to evolve their own ideas and his own village worker students gave classes in the local village school, the job of the village worker at any level being to share his or her knowledge.

THE USE OF LOCAL RESOURCES IN REHABILITATION SERVICES IN ASIA

THE HON. DR HARRY S.Y. FANG

DR FANG said Rehabilitation International aimed at doing similar work to that already described but was hampered by shortage of funds. It was hoped that the United Kingdom, in particular, would play a more active part in it in future. DR FANG welcomed the symposium as offering an excellent opportunity of exchanging ideas on the subject and, it was to be hoped, of finding solutions. He could only speak for what was done in Hong Kong and from hearsay, as he had himself not been there, in China.

As China could never hope to produce enough fully-trained doctors in time to deal with its present population of 800 million, a system had been evolved under which three classes of doctor were trained. At the bottom of the scale were the so-called 'barefoot doctors' who had had only six months' training and who corresponded to Dr Werner's village health workers. Next there came doctors who had had two years' training in a single subject, e.g., appendectomies, amputations, etc. Lastly, there were doctors who had had five years' training plus one year as house doctors or surgeons.

One practice peculiar to China that was also used in Hong Kong was acupuncture. No one really knew exactly how it worked but it was undoubtedly successful in reducing soft tissue pains and for standard anaesthesia. Its value in a given case did depend on careful preparation and the sensitivity of the patient. It was used in Hong Kong in rehabilitation of mental patients and drug and alcohol addicts some of whom could be taught to use it themselves.

Hong Kong consisted of some 365 islands and a small peninsula, no more than thirty miles from the Chinese mainland. It had learnt self-reliance the hard way, its population having grown from 65,000 in 1946 to 4.5 million today, largely through legal and illegal immigration, family planning having successfully reduced the national population growth rate from 2 per cent to 1.4 per cent. Its only natural resources were its people for it produced no raw materials and relied on exports for its livelihood. Rehabilitation was therefore obliged to begin by satisfying the patient's basic needs for food, clothing and housing. The simple resettlement estates that had been built originally allowed no more than 25 sq. ft per person, though this had now been raised to 35 sq. ft. The average basic monthly wage was £70, there was a six-day working week and many people did two jobs. There was no unemployment benefit.

Rehabilitation had first begun about 1956 when the first child centre had been built. Before that, some help was given to the blind and there was an island to which those suffering from leprosy were sent. Today, increasing help was being provided for the disabled of all types. Simple appliances were being made of bamboo, rattan and wood and the availability of these together with the development of more skilled technicians were resulting in the production of more sophisticated equipment as well. Hong Kong, he suggested, led the world in the treatment of spinal curvature and had been one of the earliest governments to introduce immunization programmes which had dealt, since the 1950's, with smallpox, typhoid, cholera, polio and cerebral palsy. There had been no case of smallpox since the middle 1950's, the last case of cholera locally had been seven years ago and the last local outbreak of polio had been in 1965. Cerebral palsy had also been significantly reduced. The Joint Council for the Physically and Mentally Disabled, set up in 1963, had done excellent work in finally persuading the government to establish a comprehensive programme for rehabilitation to be published shortly. No more 'disease palaces' were being built. Crippled children were given play centres in church buildings, disabled persons of various kinds were given work on building estates and former leprosy patients were re-integrated into the community.

DR FANG said the problem of rehabilitation could be dealt with by a three-pronged attack: (i) knowledge of the subject must form part of the curriculum for social workers, teachers and medical and paramedical students, as well as for schoolchildren themselves; (ii) as much use as possible must be made of village health workers and other members of the community; (iii) use must also be made of the medicine men in the villages. One essential condition, however, was to gain the ear and heart of the politicians.

To Mr Wells's statement that he had been in Hong Kong the previous December and had seen for himself that 'disease palaces' were being built and there was no talk of using auxiliaries, DR FANG replied that they were being built for training purposes as required. MR BRAND referred again to the necessity of training doctors in the environment in which they would have to work; if trained in 'palaces' they would need 'palaces' to work in. DR FANG agreed that this was not yet the case in Hong Kong but added that, in China, students taking the five-year course spent one month of every year in the villages and he hoped that this would before long become the rule in Hong Kong also. He himself already took his own students out into the villages.

HOW TO REACH THE FAMILY

PROBLEMS AND WAYS TO SOLUTIONS IN HEALTH CARE IN DEVELOPING COUNTRIES

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In all work concerning health problems in developing countries it is well to remember the WHO definition of health: 'Health is complete physical, mental and social wellbeing, and not merely the absence of disease and infirmity.'

Health in the sense of this definition concerns man as individual as well as social being. It concerns his physical and his psychological wellbeing and his integration into his social environment.

The closest social environment for each individual is his family. His individual wellbeing and that of his family group bear reciprocal relationship. The health knowledge and behaviour in the family, eating, living, clothing and communication habits, etc., are important for the health of its individuals. The attention given to the needs for growth and development of young children, the care of the sick, are of importance. No health services from the outside, however sophisticated, can be compared to the important resources inherent in the family itself. Within the family it is especially the mother on whom responsibility for health care depends. In the raising of young children, in the care of the sick, a mother takes care to the best of her knowledge. It is not an exaggeration to say that a nation's health depends to a great extent on the health knowledge of her mothers. That knowledge is rooted in the health behaviour of the mother's own family in her childhood. Later she learns intellectually or by experience new health knowledge. How much of her knowledge comes from modern health care resources depends on the degree that these resources relate to the family. A mother who knows the symptoms and dangers of severe childhood illness and also knows what modern health services can do to prevent or cure them will want her child to have that benefit.

The family is embedded in a community with characteristic cultural background and social institutions. One of these are the modern health services. To the degree that these services are part of the social life and fabric they can effectively disseminate adequate health knowledge and motivate adequate health behaviour. However, mere existence of services, even of the highest quality, is of little benefit.

Absolute health, of course, is an ideal. Nevertheless, for each individual at each stage of life there is an optimum level of health possible. In each society, there is a maximum possible number of citizens physically and mentally healthy and socially well adapted. However, such optimal individual and social health level is impaired to different degrees by inappropriate health behaviour, by inappropriate interaction with and exploitation of the environment, and often by uncontrolled forces that press for change and threaten long established social order. In summary: human ignorance, negligence, unconcern or greed, and other factors inherent in the environment threaten the optimal level of health possible for individuals and in society.

Theoretically, the health professions bear a great responsibility, inherent in their reputation and training, to be alert to threats to health. They should be promoters of optimal conditions in the physical, mental and social environment of all citizens to guarantee their right to optimal health.

However, since medicine has followed the path of natural sciences, scientifically founded methods for research and practice concerning the physical health of man (including preventive and curative care approaches) have prematurely developed to almost total exclusion of concern with the mental and social aspects of health. Psychology and social sciences are relative latecomers in medicine and health care. And today's health professions are still ill-equipped to cover such an encompassing responsibility.

This, together with other problems, has complicated modern health care delivery in developing countries tremendously. Yet it has not yet received sufficient recognition. Our western comprehension of the impact of mental and social environment on health is insufficient. It is insufficient to meet the challenge inherent in the task to develop appropriate modern health services in other cultures and societies with their countless varieties of mental and social environment for individuals and families.

If we make health care in other cultures our concern it is essential to accept the broad definition of health as given by WHO. Today's western health care practice is stereotyped. It has made itself dependent on proper technology application and this requires co-operative behaviour of patients for success.* However, such expectation does not correspond with value sets, concepts and living conditions of people in many culturally different societies. Therefore the goal in health care cannot be the delivery of technology and care. The goal must be, in tune with the WHO health definition, the improvement of physical, mental and social wellbeing of the human being in his respective environment. Modern technology and care institutions have much to offer. But their uncritical transplantation alone is of dubious value.

The situation of maternity care in a certain country of the third world may serve as example: this country has available highly qualified obstetricians in reasonable numbers. She has a fairly sufficient number of hospital beds and hospital delivery services of high standards available. She has made great economic progress and suffers not any more from gross poverty. However, 95 per cent of all mothers in rural areas deliver at home. In most cases they are merely attended by a relative. This is not the result of just lack of finance in the family. It is as much due to the cultural meaning of birth which renders the stereotyped western services ineffective. In that country, by tradition, birth is still an event that belongs into the protective realm of the family. The advent of a new family member is not an event concerning only a particular woman and her physical condition (with whom the health services can interact on an individual base).

It is an event concerning a particular family in its community setting, an event for which the whole household and village are getting prepared. The new child, even before birth, establishes relationships with other family members also, not just with his mother. The available modern services do not take account of this. They insist on dealing with the mother alone. And so it happens that pregnancy and birth have little relation to the health services. There is even little incentive for these families to learn such knowledge and to prepare such resources which would make pregnancy and childbirth at home a less hazardous event for their mothers and children. And the health services do not teach or work in maternity care in the homes. But much suffering and economic strain continue to burden families and the nation for one more generation's time, because simple efficient delivery care – in face of availability of modern health services – is not practised.

*They need to co-operate with an unfamiliar technology while their psychological need for care and attention to their social environment is ignored.

We can compare the situation to a skyscraper on top of which is a penthouse with all modern health services and technology. But there is no social staircase or elevator for the community to reach them. Although there are efforts to build a staircase from above, the community people, who have to finance this, do not co-operate. To them the penthouse services bear no relation to life. And the need for a staircase for their own sake is not apparent. This is the reason why insurance systems so often fail. We penthouse occupants have invested much effort to make our services more available. We have, for instance, lifted young people from their community up to the penthouse and taught them its technology and care at great cost. And our surprise was great that they too needed skyscrapers to deliver penthouse care and started to build them at home. Our penthouse mentality prevents us from recognizing that what we have and know and do is insufficient. It is insufficient as long as we have not the means to relate it to those who need it in the social context in which they live.

What can be done about such a situation? It is apparent that a bridge is needed between stereotyped health services and the many different cultural and social environments in which the people live who are entrusted to our care. The key to the dilemma is with the communities. There are tremendous resources inherent in any community to make modern health services effective. Community co-operation and interest at the grass roots can enhance modern health services anywhere. The resources are the communities' leaders, official and unofficial, their teachers, their literate people and, most of all, their mothers. The secret is acknowledgment and utilization of these resources wherever modern health services shall be offered. In most cases the community environment is unfamiliar to modern, that is western-trained, health manpower. They come from cities, they have a 'higher' education. Their concept of health and illness is western and it is not necessarily related to that in the population. As long as they insist that their understanding is the only right and justifiable one, they are doomed to penthouse existence. A major problem is that modern technology, to them, provides the necessary justification.

Yet however ill equipped modern health workers are to approach a given community in a given developing country with physically, mentally and socially acceptable and adequate care, there are promising approaches. They have only recently become of interest. It is the team approach of modern health workers together with workers from the communities who are their counterparts (and not 'dependent'). For lack of a better term I will call them frontline workers (F.L.W.s).

Frontline workers in this sense are community people (preferably women of middle age) who are not different from anyone else in the community. They live and think and communicate in the same manner as everyone else does. They are one of the community in every sense. The only aspect in which they should be different from their neighbours is that they are of the innovator type, and that they are among those whose opinion is respected in the community. F.L.W.s become most valiant for efficiency of health services if their tremendous capacity as pivot or communicator between community and health services is recognized and systematically utilized by the health services. They contribute the understanding of their community environment and can evaluate community responses to health care activities. They can give invaluable advice as to how important services can be carried acceptably into the community. They are specialists in communication with their own people. They already have the essential knowledge and experience with which 'modern' health care must be balanced to reach effectively all clients. They do not need much 'health knowledge' to become effective. They need to be familiar only with the health care delivery system and that basic knowledge of health, hygiene and patient care which a good housewife should have.

Such are the kind of people the health services must try to win as partners. That is no easy job if it is taken seriously. But the identifying, winning, training and implementation of such workers has been conceptualized and practised in various instances with success. Sociological methods are established to identify suitable persons in a community and to interest them and the community in the work of a F.L.W. There are means to interest them in what the modern health services have to offer their community. The first steps are the most sensitive ones since they already require sound understanding of culture and community. We had one of our staff living for months in the community as participant observer while she took an essential part in preparation for selection, training and implementation of the new worker. Directions for training and implementation have been worked out in different places. And although it should never be forgotten that details depend on the specific situation and that sensitive approaches must be developed accordingly, general principles have been given.

F.L.W.s need not have much knowledge of health and illness. It is not essential any more for them to fulfil their function than it is for an engineer to repair an X-ray machine. They are not ancillaries but counterparts to the health services. They must, however, be provided in their training and work situation with those essentials that bring their capacities into unity with the health services. Details, again, depend on the local situation but must be carefully covered in the training and consistently fostered in the community. These essentials include:

1. Familiarity of the F.L.W. with the health care system.
2. Integration of F.L.W.'s activities with the health care system.
3. Access of the F.L.W.s to the target households and vulnerable groups.
4. Support by community authorities.

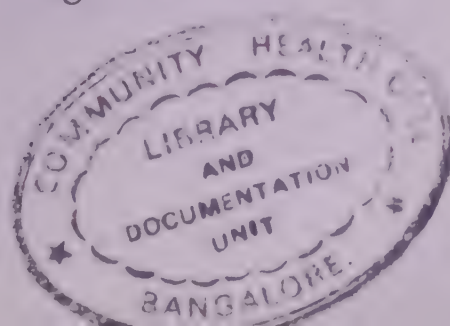
First aim of F.L.W. training must be their familiarization with location and function of the various levels of health care available to their community and an understanding of which one is to be consulted on what occasion: health post, health sub-centre, health centre, hospital, private clinic, etc. They should have a counterpart relationship with health workers of grass root services and working relationship, with established means of communication, with those above. They should understand referral procedures and feel at home at all levels. In other words, they should be able to direct a client to the appropriate resource and accompany a patient through the thicket of the unfamiliar health care system. Therefore they need status among community people as their health representative and respect from the health services as patient counsellor and health service adviser in patient and community affairs.

Of equal importance is the access of F.L.W.s to their target population's homes, to vulnerable groups, and the integration of their community work with that of the health services. There is no better example of how that can be done than the under-fives services which David Morley inaugurated in Nigeria. I do not know if the entry point aspect of the under-fives services for comprehensive community health care in developing countries has been emphasized. To be able to start community health care with such simple and efficiently tested system means to get immediate access to almost every family in the community. If the frontline worker is a community mother herself, and one to whom other mothers already are used to listen, and if she has regular health service contacts with each child and his mother in an unobtrusive, culturally acceptable manner, a communication channel has been established between health services and families. At the same time, the health services have established contact with the most important health service providers in the community – the mothers, especially those with young children. A communication channel does exist

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through which essential health knowledge and motivation for practice can be carried directly into the family. From a F.L.W. covering under-fives care only to one working as partner in a comprehensive health care system at grass roots is only a small step. If community health priorities are established, the F.L.W.s need only to be provided with such additional knowledge and skills with which they can stimulate the related family and community awareness, interest and co-operation. All basic channels of communication and all basic community activities already exist.

Efficient supervision is, of course, essential for success. However, supervisors must recognize and respect the F.L.W.'s counterpart function. The community leaders should, therefore, be motivated to uphold and support the F.L.W.s as their health representatives. The establishment of a functioning, responsible community health council that works in co-operation with the health services will be the final and essential supportive pillar for completion of a sturdy bridge between modern health services and the communities in developing countries.

Such 'frontline worker and community co-operation' approach is promising to overcome grassroot apathy and helplessness in many culturally different environments which co-exist with the stereotyped inefficient western health services. A community whose awareness level is high enough to take initiative in adapting and using available health resources has put an axe to the major 'cause' of its health problems.

The greatest challenge for improving health conditions and health practice in the community is to reach its mothers with stimulating information. There is no better way of promoting grassroot hygiene, nutrition and utilization of existing health resources than to teach one innovator among mothers the essential knowledge, give her access to all families and to send her on rounds. This is one very effective approach how institutionalized modern health care can improve its effectiveness. It is a way to relate its potentialities directly to the needs of the families and to bring the necessary education in an acceptable effective manner to the consumers.

It will be a long time before health services have available equally well developed and scientifically founded psychological and social approaches to health care in the community of developing countries as they are available for the care of physical health.

Meanwhile, the most promising approach is the teaming up of simple, scientifically sound, 'modern' grassroot services with community inherent potentials for their empirical psychologically and socially adequate integration. F.L.W.s are essential catalysers for such process. Their concept has been tried with encouraging success in various instances. It provides stereotyped modern health services with access to families in culturally different communities with their different value systems, health problems, health concerns and capacity to co-operate. It allows the health services to orient their activities to the needs and resources of the average family in a particular community. Modern health services in co-operation with mobilized community resources can approach the goal successfully: the improvement of the physical, mental and social wellbeing of the people in the community.

The catalysing process has started. Its speed will depend on the number of those innovators in the penthouse establishment, who in recognition of their isolation and ineffectiveness in health care in developing countries are willing to work with community people as their partners and to promote the idea in the establishment.

DISCUSSION

DR SICH said the authorities in South Korea were much concerned with prevention, and rehabilitation was still a somewhat remote concept. She felt the important thing was for the health services to reach the whole family, including the disabled. Patients who stayed too long in hospital lost the ability to exist outside that artificial environment. But the natural environment in all life's crises – childbirth, illness, death – was the family not the hospital. The latter was bound to follow the rules of modern health techniques but the patient needed more than that. How did the hospital relate to the ability of the individual to care for his own health? The family and in particular the mother had infinite inherent resources and the health of a nation depended on the care given to its children in their own homes. Although conditions varied from country to country, almost all health services tended to be standardized on western models – in other words, to become stereotyped and over-dependent on technology. Spectacular as some of the results of scientific research methods might have been, they had been achieved to the almost total exclusion of other aspects such as the psychological and those related to the social sciences generally. This could damage the patient, especially the physically disabled, in many ways. In the developing countries, especially, the non-physical impact of illness was all but disregarded and health services must learn to take it into account and teach the community as a whole to do so likewise.

Patients in the developing countries had, in any case, to cope with unfamiliar and often frightening techniques and the uncritical use of these in any and every situation, however different, could be not merely useless but actually dangerous. A bridge was needed between modern technology and the local environment and this could be found by making use of the community and what were, in fact, its vast resources. Remembering WHO's definition of health, their goal must be the improvement of the physical, mental and social well-being of the human being in his own environment.

Channels of communication did in fact exist and could be found in the women – to be found in every community – who were respected by their neighbours and willing and anxious to help them in this particular way. The name given by Dr Sich to these women was 'front-line workers' and their task, as she saw it, would be to advise the health service of the needs of the rural areas in general and their own area in particular, and to advise the members of the community where to go for treatment and what procedure to follow. They would be given the necessary training in the organization of the health services but not any kind of medical training; their task would be to advise, not to give treatment. On the other hand, it was important that they should be regarded from the start as the counterparts of the trained health workers, not as their unskilled dependents and this would mean that the selection of their instructors and supervisors would have to be most carefully carried out.

DR SICH illustrated her general theme by a striking comparison between the inhabitants of a penthouse on the roof of a skyscraper, representing all modern health services and technology, but with no staircase or lift that would allow communication between them and the members of the community living on the ground below. To the latter, therefore, the services provided in the penthouse bore no relation to life, and although some young people from the community had somehow been lifted up to the penthouse and taught its technology all they had acquired besides had been the belief that they must build another penthouse at home in which to practise their new techniques. It was her hope that her F.L.W.s might be a means of showing such young people how to work on the ground.

In answer to a question by MISS LEVITT about the use of mothers to help disabled children in other countries, the Chairman invited Miss Ichie Gamo of the Shigaseishien Physiotherapy Department, Japan, to describe her work.

MISS ICHIE GAMO said she had carried out a survey between May 1975 and February 1976 on the treatment of out-patient children by their own parents. Sixty-four families had been questioned of which fifty-one (80 per cent) had replied. The results had been as follows:

Question: Did you notice a change after the treatment applied by you at home?

Answer: Yes (90 per cent) No change (4 per cent) Unsure (6 per cent).

Question: Where was the change noticeable?

<i>Answer:</i> Motor development (60 per cent).	Psychological development (4 per cent).
General condition (9 per cent).	Motor and psychological (17 per cent).
Motor and general (9 per cent).	Other (2 per cent).

Question: Is it difficult to give exercise at home?

Answer: Yes (37 per cent) No (63 per cent).

Question: If your answer is 'Yes', what is the reason?

Answer:

1. Child cries.
2. We have no bed.
3. It is difficult for the mother to give proper exercise.
4. The mother is working.
5. The mother is pregnant.
6. The child goes to school which leaves little time.

Question: What kind of service do you want?

Answer:

1. Out-patient (88 per cent) treated at home by mother.
2. In-patient mother and child (6 per cent).
3. In-patient child alone (2 per cent).
4. No opinion (4 per cent).

Question: If your answer is (1): Why do you want to treat your child at home?

Answer:

1. Child is immature and cannot be separated from its mother.
2. Child has much to learn at home.
3. Child gets better through treatment by the parents.
4. We want to be responsible for our child.
5. Child does not want to leave its home.
6. So that the child can continue to go to school.

Question: If your answer is (2): Why should mother and child be in-patients?

Answer:

1. Mother is pregnant.
2. Get training for a short time.

Question: If your answer is (3): Why should the child be an in-patient alone?

Answer: Because there is a sibling at home.

Question: Do you want the therapist to visit your home?

Answer: Yes (37 per cent). Prefer to come to the clinic twice a month (61 per cent). No opinion (2 per cent).

Question: Do you feel that your child receives enough exercise from you at home?

Answer: Yes (78 per cent). No (18 per cent). No opinion (4 per cent).

Question: If your answer is 'No', why is this exercise not enough?

Answer:

1. If there is another good exercise I should like to learn more.
2. Want speech therapy.
3. This method (Vojta's) does not apply to my child.
4. The results are slow.

General requests:

1. Vocational therapy, writing, speech therapy.
2. The M.D., physiotherapist and parents should meet and talk.
3. We need a kindergarten.
4. The clinic is too far from where we live (ask village section).

DR RAMA RAO, supported by **MR OSHIN**, insisted on the need for the mother's help and said the Bombay Institute ran a two-month training course for mothers who thereafter carried on successfully at home. **DR VARMA** said when patients came from far away, especially polio or cerebral palsy cases, the Delhi hospital insisted on mothers learning the exercises to continue them at home. Some mothers of spastic children had become interested themselves and opened a school in the hospital for which they were collecting funds, etc. It was hoped to organize them into small groups to come and help children whose mothers could not visit the hospital, or other mothers of spastic children. **PROFESSOR BREUER** felt sure it was better for all patients to carry out their physiotherapy at home, the presence of a caring family being an important ingredient in its success. It was not always so easy in towns where the presence of other children, or the fact of the mother going to work, might make it difficult to have the child at home. The problem must be examined as it existed when no family was available, for example in the case of old people.

THE IMPLICATIONS OF COMMUNITY INVOLVEMENT IN THE DELIVERY OF SERVICES FOR THE DISABLED: MANY QUESTIONS RAISED WITH A FEW ANSWERS – MAYBE?

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First, an explanation for accepting the invitation to participate in a conference on the care of the disabled, realizing that this participant has had little training and experience in the field of the 'invalid' when considered within its usual context. Reasons for attendance: *first*, to learn from others more about that nebulous concept, 'community involvement', which is the base from which plans and implementation of any service begins. *Second*, to relate our experience in the field of community work. And *third*, to learn of the possibilities of broadening the concept of the 'disabled'.

Who are the disabled? Might not the sophistications of considering the 'disabled' within their

usual definition limit the responses necessary to be relevant to these deprived people? Just as health has many implications – cultural, social, economic and political – so services for the disabled must relate to the total situation of the patient and not just to a curative concept of his physical ailment. No human condition, healthy or unhealthy, is isolated and disassociated from the forces that bear down on the affected person. Services for the disabled then must be considered within the context of a total goal and need of the patient, not just related to his lame leg or flail arm. Health care in general then, with all the implications, must be a consideration in the offering of services for the disabled.

In the establishment of the guideline of ‘care’ for the disabled, the goal should be a service for the afflicted people on their terms and within the concept of their own expressed realities. The route to health in any such programme begins at the periphery with a dialogue with the patient (people) on equal terms, with the patient articulating his felt needs. A period of mutual relevance and consciousness-raising brings these needs and services into their proper perspective.

With the establishment of communication, further goals should focus on putting the knowledge and tools and decision-making in the hands of the patient so he as much as possible can care for himself. Just as in medicine generally, care should be oriented to self-care and self-curing, though realizing such is nebulous and difficult considering the need for dependence that exists in many cultures. This though should not detract us from the ultimate goals of putting health care where it properly belongs, namely in the hands of the people. No culture can longer afford the excesses of the professionals in medicine, for various reasons; the mystique and power of the doctor must be placed within their proper context where the medical professional serves as a collaborator and true healer by functioning as a teacher – to teach the patient to care for himself. The doctor of medicine is not the custodian of health as is commonly supposed, but the patient is the keeper of his own health, and life, and death.

To a degree, the professions in medicine have even forfeited their *claim* to be the custodians of health, since they have neglected to use that great common equalizer, medicine, as a powerful social cutting tool to bring about just and humane social development and change; but rather, in fact, have elected to use this awesome lever for their own exploitive and self-serving purposes. Just as in general medicine, the healer in work with the handicapped must use this great common denominator, medicine, for justice for all.

Where then does community involvement fit into this scheme and what are the guidelines for the attainment of goals?

Here then is presented an outline of *community involvement*: *A Definition of Community Involvement*: The active exercise and celebration of self within the context of relevance to the common community good, which has as its basic substance reflection, self-evaluation, decision-making and implementation of planning.

Goals

1. Establishment of communication between community and outside resource people.
2. Expression by the community of *their* concept of health care and *their* needs.
3. Integration of existing community health care systems with other health care input, considering all the implications – social, economic, cultural, and political.
4. Involvement of total community in decision making and the establishment of channels of communication between persons at all levels of living.

5. Organizing for reflection together on common needs and common goals.
6. Build in a phase of self-evaluation for clarification of realities.
7. Definition of goals and assessment of priorities, needs and services.
8. Achievement of justice for all – socially, economically, culturally, and politically.
9. All preceding goals are dependent on local decision-making, utilizing local resources, human and material, with outside influences, particularly institutional and professional, kept at a minimum.

Realities

1. Communities are variable, so involvement then necessarily must be variable and flexible.
2. Communities often are fragmented and stratified, making cohesive community diagnosis and problem-solving difficult.
3. Many have as high priority their own self-fulfilment for exploitive reasons.
4. Traditional approaches to problem-solving too often enhance the power of the already powerful, particularly the self-serving institutionalists and professionals.
5. Possible change must be considered within the context of local cultural, social, economic, and political realities.

Questions Needing Answers – How Can the Following Be Achieved?

1. How can identification of existing power groups and persons be achieved in a realistic fashion?
2. How does one promote communication between the various power people and groups?
3. How is a viable programme of group reflection and involvement structured?
4. How can the concerned and powerful be motivated to serve the common community need?
5. How do we establish indicators of involvement and motivation to measure achievement of goals?
6. How do we structure and implement community diagnosis and evaluation?

DISCUSSION

DR BEHRHORST said one important theme too often forgotten by doctors was the importance of the patient himself. Dr Werner and Dr Sich had both stressed this. Had we any real conception of the meaning of a community? The Symposium should be raising basic issues rather than discussing methods. They should get away from categorizations and seek a broader concept of 'disabled', based on the total implications of the word 'health'. The dictatorial attitude of some doctors must give way to the concept of serving the sick or disabled 'on their terms'. People had by now become accustomed to depend on doctors and the situation had perhaps better be left as it was for the moment but, since no one could operate without a goal, their goal should be self-help and self-curing. No culture could afford the cost of medical care as it was today for very much longer. The doctor was not the custodian of the patient's health and decisions should lie not with him but with the patient himself or, if necessary, his family. Medicine was indeed the great common denominator but doctors had failed to use it to bring about social changes.

DR BEHRHORST described it as a mistake to think in terms of projects. The place to begin investigations was among the people and this would in due course reveal what projects were needed.

Rehabilitation workers must learn to act *with*, not for, the people and to integrate their services with the local services and the existing – usually governmental – agencies. If they could not do that, they might as well go home. He was not inclined to blame the governmental agencies for their possible shortcomings because they themselves were prisoners of the system.

Guatemala, said DR BEHRHORST, had accepted the concept of health workers and, in that connection, he wished to draw attention to Dr Sich's insistence on the need of being supported by the community authorities. This was important because there was no place that was without its power groups which had to be encouraged to organize matters and take decisions. That was another important task for which it might be necessary to enlist outside help as it presents a number of difficulties. As had already been said, they must provide curative care. As the future of medicine depended on the doctors *and* the community workers, flexibility was vital.

DR BEHRHORST ended with a quotation from Chairman Mao: 'Our point of departure is to serve the people wholeheartedly and never for a moment divorce ourselves from the masses; to proceed in all cases from the interests of the people and not from one's own self-interest or from the interests of a small group.'

SUMMARY

MR ACTON, summing up the morning's meeting, said Dr Slater's summary had put what they had heard into context. Dr Klopper had reminded them that solutions often brought their own problems and had drawn attention to the difference between planning for the world disabled as a whole and dealing with individual patients. It was true that dealing with large numbers was apt to lead one to forget the human beings behind the statistics, but it was also important not to lose sight of the world angle. It was impossible to develop rehabilitation services rapidly enough to catch up with the annual increase in the number of disabled, let alone those who existed already. Regarding the meaning of 'disability', there was apt to be disproportionate concern with the specific medical problems involved, whereas disability was a community problem and, in many cases, better dealt with by simple methods inside the community itself. The difficulty was with professionalism in general and he referred to Dr Fang's 'umbrella' doctors in China. The job of those attending the Symposium was to stimulate interest in the community angle. That would be the task, or one of the tasks, of the Unit to be set up in Teheran of which they were to hear more next day.

PROFESSOR GOLDING commented that many speakers from different parts of the world had expressed the belief that something was wrong in the world of rehabilitation, and reached much the same conclusions. Their own feelings on the subject might still be somewhat vague but had been reinforced by the Symposium and would soon be shared universally. As one speaker had said, however, it must also be remembered that the doctor's judgement was still needed and this could not be developed without a comprehensive training which could not be provided at grass roots level.

THE EVOLUTION OF A PROSTHETIC AND ORTHOTIC SERVICE IN A DEVELOPING COUNTRY

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Introduction

Rehabilitation of the physically handicapped is usually relegated a secondary role in the face of enormous medical and social needs. Such an approach is dangerous as it submerges the issue until the problem reaches unmanageable proportions. Most authorities agree that, whatever a country's resources are, a rehabilitation programme, however modest, must be intimately blended with its social and health care delivery structure early on.

Although not all rehabilitation problems are solvable by mechanical means, it is an obvious fact that the speedy provision of a suitable artificial limb or other appliance goes a long way towards allaying the physical handicap. This, then, is an area of high priority if only taken from the pure economic principle of cost effectiveness.

The Problems in the Developing Countries

These are many and naturally vary within the developing countries with the degree of development attained. Inadequacy of financial resources is only one facet, but closely coupled with it is the dearth of advanced technical knowledge and skills. The population is thinly scattered over vast areas because of its dependence on primitive agricultural and nomadic pursuits, with poor means of communication.

The managerial and administrative systems are often inefficient and wasteful, so that the potentials of service remain grossly under-utilized.

Particularly related to the field of rehabilitation in general is the prevalence of crippledom. It lashes hard at childhood since poliomyelitis is endemic and the incidence of cerebral palsy is many times that in the developed world due to obvious perinatal and special tropical causes. Bone and joint infections add a further toll and skeletal malformations present late and constitute a big challenge. Industrial and road traffic injuries are on the increase. Patients reach hospitals late often untreated or inadequately treated, with resultant permanent disabilities out of proportion to the initial injury.

Whatever the cause of his disability, such a disabled person stands a poor chance of gainful employment in a developing country where unemployment in its overt and occult forms is so common.

Prosthetic and Orthotic Services in the Sudan

Historical Background

Artificial limb making made a modest start in the early 1940s through personal initiative in the Mechanical Transport Department Workshops to serve the amputees of the 'Sudan Defence Force' during the Second World War. The service gradually expanded to cater for civilians and the Senior Surgeon to the Ministry of Health became actively involved in prescription and supervision of fitting.

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With the initiation of an orthopaedic service in Khartoum Hospital, with the help of the Nuffield Orthopaedic Centre, Oxford, in the early 1960s the workload on this small Unit became greater and it was imperative that the Ministry of Health should take over.

The National Prosthetics and Orthotics Centre

This was inaugurated in May 1974 with the following plans:

1. The continuation of production of the simpler appliances and the techniques of the old Unit.
2. A quick improvement in quality with a short phase of resort to some prefabricated components.
3. An eventual phase of dependence on locally available materials.
4. The search into simpler methods of fabrication and cheaper materials to produce durable appliances suitable to our largely peasant community.
5. The establishment of smaller satellite centres in all the provinces manned by technicians trained in the national centre which will also produce some necessary components.

Buildings

These are ambitious and carry a good potential for the future. The overall enclosure provides ample space for building expansions for other areas in medical and vocational rehabilitation.

Equipment

Basic machinery, hand tools and a certain amount of prefabricated components were imported. Some heavier machinery is needed to enable more efficient use of locally available timber and steel.

Manpower

Four technicians all with twelve years of basic plus three years of technical education were sent abroad for an eighteen months' training course. The senior foremen had a three months' upgrading course in Cairo. These supervise and train a group of thirty or so semi-skilled labourers taken over with the old unit.

Two Years' Experience

The initial target aimed at producing four hundred artificial limbs and one thousand calipers annually. This has not been attained essentially due to organizational difficulties, but the production is gradually increasing.

Artificial Limbs

The emphasis is on the 'peg-leg' or pylon. This is simply a good leather socket mounted on to an aluminium support which is riveted to side steels ending below on a wooden rocker with a thick rubber cover. The average life of such an appliance is four years even with the most active young farmer. The local blacksmith and shoe-maker often provide welcome repairs.

Naturally this is not the ideal answer from the amputee's view point; but on the credit side he

gets his leg in a much shorter time and pays less for it. A charge of four pounds is made on the below-knee and eight pounds on the above-knee peg-leg, while a charge of fifty pounds and one hundred pounds is made on the conventional 'articulated' below- and above-knee legs respectively.

Funds are available from the Ministry of Health to pay for the peg-legs, calipers, crutches and spinal braces for the poorer patients.

Calipers

These are made from steel sheets of variable gauge depending on the age and size of the patient. Though some imported joints are available, the vast majority of the calipers are provided with locally made joints and locks. A charge of two pounds is made on all calipers.

One of our main problems is concerned with the provision of shoes. At least the type of shoe or boot that suitably fits on to the caliper is hardly worn by our children. Though the Government Leather Institute provides these shoes at subsidized rates the patient has to pay up to six pounds for a pair. A surgical shoe section is planned for the centre.

DISCUSSION

DR AHMED drew attention to the differences both between developing countries and inside those countries themselves – between urban and rural areas but also between the various regions. The relevant government departments developed unevenly due to political differences, and the influence of pressure groups and social customs. Rehabilitation of the physically handicapped had lagged behind owing to the number of other demands for medical services and the shortage of funds, the result being that it was now tending to become an unmanageable problem. There was general agreement that a rehabilitation programme ought now to be included from the beginning in any health programme. It was all too easy for an acute individual case to become one of the large 'pool' of disabled which was accepted generally by the community until one such case was in fact dealt with successfully when it was at once followed by a flood of others. To disseminate information on the possibilities of rehabilitation was not, therefore, always helpful. The promises of politicians led to much frustration when they were, as usual, not fulfilled and there was a shortage of money and of technical know-how.

One of the most important rehabilitation methods was the provision of a walking aid or artificial leg and this could be given high priority at a low cost. This was especially valuable in the Sudan where there was a general shortage of finance, technical knowledge and manufacturing potential.

Whereas in the West it was usually the elderly who required rehabilitation in one form or another, in the Sudan it was largely the young. As in many developing countries, there was a high proportion of cripples, many of them children who had suffered from cerebral palsy or poliomyelitis which was endemic in the country. There were also many cases of fungoid foot infection resulting in amputation. What they were hoping to do was to improve their techniques so as to produce more sophisticated prostheses than the old 'peg-leg' or pylon but this at once raised the question of who was to be fitted with the pylon and who with the articulated leg when available. It was true that some patients who had been fitted with the latter came back later asking for their old pylon back again. So far as payment was concerned, all drugs were paid for by the Government but it

had been decided that the patient must contribute something towards an artificial limb, if only to encourage him to take reasonable care of it. But no patient, however poor, returned home having been refused an artificial limb and help could be obtained, if necessary, from the Ministry of Health, certainly for a pylon and sometimes for an articulated limb. Shoes presented a problem both for patients with artificial legs and for those wearing calipers. Plastics, especially ortholene, were particularly useful as they could be moulded on plaster casts as well as being used for children who could not cope with steel calipers. Plastics were used also for splints and for appliances worn by day or night to prevent contractures. Plastizote was used for collars and corsets, with or without reinforcements of special plastic material. It was hoped in time to extend the centre for the manufacture of appliances, but the intention was to try out new appliances gradually only, in order to save time and materials.

PLACEMENT OF PATIENTS WITH SPINAL CORD INJURIES IN FLATS AND HOSTELS

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MR BALACHANDRAN said Singapore, as a highly urbanized society, presented a number of difficult problems. Although many diseases had been wiped out – there had, for example, been no polio cases since 1968 – there were a number of preventable diseases (heart disease, sexually transmitted diseases, drug addiction, etc.). After the war, rehabilitation services had been mainly voluntary and directed to the blind, spastic children and children who were neglected by their parents for whom various homes existed. Orthopaedic surgery had begun in 1954 but not much attention had been paid to spinal injuries, partly because of the cost. There was now a new department of primary health care and one to deal with diseases of the spine. The Department of Rehabilitative Medicine (D.R.M.) opened in 1973 and now had three wards, one of which was a male spinal unit. There were many fewer women suffering from spinal cord lesions and these were admitted to a mixed ward. MR BALACHANDRAN summarized the information in the report relating to the housing, or rehousing of patients discharged from the D.R.M. hospital. Much of the new building in Singapore consisted of high-rise flats but patients usually wished to return to them. There were a number of difficulties to be overcome, such as narrow doorways, steps, toilet arrangements, but it had been found possible to overcome most of these. Before a patient was discharged, the medical social worker and occupational therapist visited his home to see what, if any, modifications were needed to enable him to live a more or less independent life when he returned to his family, and these were carried out on their recommendation. If the patient came under the Workmen's Compensation Act, his employer was obliged to provide him with a wheelchair if he needed one; otherwise, one could be obtained on loan from the Artificial Limb Centre of the Singapore General Hospital. There was genuine priority for a discharged patient in employment in the allocation of flats which he would obtain within about three months. Otherwise, there was a waiting list and it took between eighteen months and two years to get one. Hostels had also been built for discharged patients who had sheltered jobs in a factory but, in spite of transport being provided to and from the factory, these were not very popular on the grounds of expense, average earnings being \$130 and the hostel charges \$70. Many of the inmates would therefore club together to rent or buy a flat they could

share. The cost of a flat varied between \$12,000 and \$36,000 according to size and the housing estates where they were situated were planned with schools, markets, etc.

MR BALACHANDRAN had also provided a paper entitled 'Polyurethane below-knee prosthesis' and a film showing the process in detail. No upper-limb prostheses were made in Singapore, he said, as it was cheaper to have them made to measure abroad. Lower-limb prostheses were made on the spot but the supply of these met only one-third of the demand and many people had to be content with pylons. Hence the development of the polyurethane prosthesis described in the paper which was cheaper and lighter than the wooden type and could be completed within three days, as compared with about six weeks, by one qualified limb fitter. The film showed the making and fitting of a below-knee polyurethane prosthesis, from the first examination and preparation of the stump, through the whole process up to the final fitting and the discharge of the patient forty-eight hours later. PROFESSOR GOLDING thought prostheses of this type should be available everywhere but unfortunately polyurethane was not available in all countries.

SUMMARY

Mr Donald V. Wilson in the Chair

Summarizing the previous day's discussions, MR COOPER referred to the Sudan where rehabilitation services were being developed from small beginnings in a way which he thought should provide an example for all countries. Centres serving nearby towns and the surrounding area could act as launching pads for rehabilitation services throughout the whole country. They had also been reminded by several speakers that certain cultural problems were involved so that techniques or appliances could not always simply be transferred, as it were, from one country to another, more particularly from the west to the east. MR COOPER instanced the wearing of shoes (whether or not removed indoors, worn by farmers while working, etc.), and the use of wheelchairs. It had been suggested that a small charge should be made for appliances and other aids as this promoted a sense of ownership and hence encouraged greater care in their use. There had been much criticism of the so-called 'disease palaces' but a correct balance must be preserved between the provision of large hospitals, undoubtedly needed for training and research, and that of rural health centres. An interesting suggestion had been that the term 'communities at different stages of development' be substituted for the usual 'developing countries'. The discussion on statistics had shown most speakers to favour beginning in a small way with local pilot schemes, rather than with a more grandiose scheme based on a nation-wide survey. In some cases, however, the latter was inevitable if the authorities refused to initiate action without it. Mr Balachandran's report had contained interesting information on architectural problems confronting the disabled and how they could be dealt with, while his film and description of the new type of below-knee prosthesis had been of much interest and value.

APPROACHING ESSENTIALS IN HOSPITAL PLANNING

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Department of Architecture, University of Bristol

There is a need to find the proper place for hospitals in the health care patterns of developing countries, a need to find the jobs that the hospitals should do and a need to find the kinds of hospitals that will fit the patterns and do the jobs. There is the need to train people to do the jobs and people to look after the hospitals in which the jobs are done. These needs all interlock and only a cohesive set of answers will do. We can't refer to established practice because established practice has failed to give adequate answers even in the western world. So at the top of the pile of needs is the need to find ways of talking about the kinds of hospitals we need and ways of testing the solutions we propose.

Let me set the stage by asking some questions. Is anyone willing to stand up and tell the developing countries that they not only don't need, but will never be able to afford any reasonable spread of hospital type care? Is it possible to plan an intelligent network of health care facilities which doesn't include reasonably thought out hospitals? Do our present efforts in hospital design and theory match up to the urgent and desperate needs of the developing world? Do we have adequate means to discuss alternative solutions to the hospital problem and do we have alternatives to discuss? Have we any real ideas about how we can tie hospitals in with auxiliary staffed health centres? Have we any idea what kind of staff will be doing what kind of job in what kind of hospital in X years' time when primary care programmes have had their effect? Do the medical buildings we now design work well? Are they good value for money? Could we do very much better than we are doing?

To all these questions but the last the answer must be no. But it is clear that we could do better using our present ideas; which is a starting point; or it would be if we were able to arrange for improvement.

I am trying to paint a picture of sore need inadequately met and, as yet, barely acknowledged. Interest has concentrated on rural care for some years. The fashionable spotlight is moving on to urban care. Because cities do not have the communications problems that so bedevil planning in the countryside it is a fair bet that hospitals will be built, or at least planned, for cities. And bingo! We will be back where we started – too expensive care in the towns, little care in the countryside. Whatever the temptation may be for us to ignore the hospital problem, the problem will not go away.

Dr Arnold Radtke of Misereor in Aachen has said 'A fundamental pre-condition for health planning in any country is a national health development plan, which puts clear-cut and realistic priorities'.¹ Is it not obvious that an early priority is finding out about hospitals – whatever their appropriate form may be? Will discussions and recommendations about hospital type buildings and hospital type care not, in the long run, dictate the dominant eventual texture of medical care, certainly from the medical profession's point of view?

There is an urgent need to get to grips with essentials here, and the essentials seem to be very simple. Just as the Conference of British Missionary Societies in their report, *A Model Health Centre*,² says 'No one should be required continually to perform a task which someone less

qualified can readily be taught to do competently', so it seems to be reasonable to say that 'no one should ever be treated (or held in storage for doctor's convenience) in a hospital when they could equally well be treated somewhere else, and in an intrinsically less expensive building'. Carried even a short distance towards an extreme way of thinking this single idea blows the traditional western hospital wide open. Is it not clear that rural hospitals will be advanced diagnostic and treatment centres supporting health centres? Everything that can be shifted from the traditional hospital programme into the new health centre building should so be shifted. But will we have the guts to think so radically about urban hospitals?

There are so many questions to be asked, and there seem to be so few cohesive answers. The answers must be cohesive because there is no sensible way in which we can separate the built fabric from the job to be done, the way the job is done and the people who do it.

In the Conference of British Missionary Societies Report, to which I have earlier referred, this general problem of fit between hospital and health centre and people and job is discussed in Appendix 44. Some suggestions are put forward – particularly the idea that not only should health centres be sited and planned with the eventual distribution pattern of hospitals in mind, but also that the whole nation's plans should be organized around the health care network. We can't plan in this way till we have thought constructively about the hospitals.

I would very much like to turn to the particular problems of children in hospital, as we found when planning the new Children's Hospital in Kuala Lumpur (as yet unbuilt) that information was either non-existent or of a very low quality. I am particularly sensitive to the fact that the problems of the young disabled, which can often be dealt with, are very significant in countries with high child populations, but I fear that such considerations are premature because we haven't left first base. This is a sweeping statement and it needs to be supported.

A major conference was organized in Nairobi in November 1974 (The Fifth International Public Health Seminar under the auspices of the International Union of Architects, the International Hospital Federation and the World Health Organization). The Conference report is published in the spring/summer 1975 edition, volume XI, edition numbers 2 and 3 of *World Hospitals*, the official journal of The International Hospital Federation,³ and parts of it make alarming reading. There is a paper which starts with words about this planet Earth and its limited resources, and goes on to describe an immense fourteen-storey hospital proposed for Sri Lanka, one of the last places that needs such a monster. The argument includes demonstrably wrong statements about the need to build high to cover less ground, and demonstrates a fearsome gap between stated intention and final effect.

There is a plan for an operating theatre, to a new national standard, which seems to have dangerous faults in the supplies handling room, combines male and female changing – an odd economy – has no post-operative nursing care facilities and could not be sensibly adapted to make an economical pair of operating rooms.

There are several plans for major hospitals which are packed with pipes and ducts, and more than man-sized false floors for services which absolutely fail to fit the conference theme of Building for Conditions of Limited Resources, and which, in running both north–south and east–west are 50 per cent wrongly orientated for hot countries. Throughout, provision at hospital level for things like clothes washing receive no mention and none of the kind of specialization that is called for in the treatment of children receives attention. We can't afford the monster pipe-houses of the 1960s

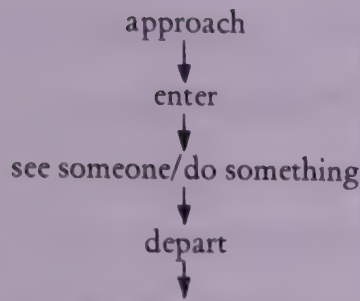
and 1970s ourselves, but the developing world is fair game? Mark you, the politicians like their hospitals big and obvious and between the best hotel and the airport.

I find this conference document very depressing indeed. It calls to mind the many occasions when doctors have said to me words to the effect 'Why don't you architects shut up and build, and we will make it work somehow?'. David Morley in *Paediatric Priorities in the Developing World*,⁴ says 'Communicating with Architects – the failure of the doctor to communicate to architects the real needs of medical care is clearly seen on a visit to almost any hospital in the tropics. Specifically, the requirements for mothers and their small children are not met in the clinic or the ward. This can only represent a failure to examine the requirements before and to analyse how successfully they have been met afterwards. This failure is seen not only in the small hospital but in the large hospital costing tens of millions of dollars. An example was provided when an architectural firm was designing their second vast hospital in Africa. In the first, the children's out-patient department had proved entirely inadequate and part of the old hospital had still to be used. In the second new hospital, the architect had not been told about the failure of his first design, nor had he received a specific "paediatric brief", and he was in process of creating another department which would again prove quite unsatisfactory. As in so many situations, no advantage can be gained by attempting to apportion blame between disciplines for this situation, which arises through their failure to achieve effective communication.' Lack of communication is certainly an essential fault, but the general answer proposed is that the doctors should tell the designers more clearly what they want; and in even greater detail. What happens then is that the doctors, knowing little about building and fitting rooms together, ask for arrangements that can't be built in real space. So inevitably the architects get the responsibility of preparing both brief and design.

At the risk of professional disloyalty I must state categorically that I believe we, the architects, have betrayed this trust – and I feel the Nairobi Conference proves my point. The terrible misfits between stated intention and drawn effect, between resource analysis and proposed solution, between medical routine and built organization cannot be spanned by anything other than a co-operative effort between doctors (and nurses and porters and so on) and designers. The first and most urgent need is to find a method of communicating together, recording considered decisions and testing growing solutions as design proceeds. We must contrive to do this in such a way that we don't waste time and by simple means so that we don't need computers and squads of secretaries and draughtsmen. After all, developing countries have none of these things.

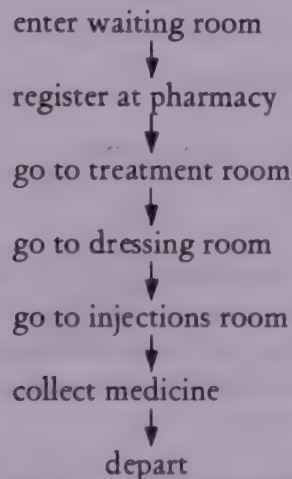
Hospitals are about housing routines. If we can find a way of describing routines which leads on to designing we will be doing well. If we can relate the routines to treatment we will be doing even better. In the Conference of British Missionary Society Report there are two specimen diagnostic and treatment routine diagrams which, by saying 'send to doctor' or 'give such and such a treatment', imply standards of care and therefore the nature of the staff and installations called for. Cross-breeding these *pro formas* with the design communication documents could lead to extremely flexible and useful results.

I want to lay before you a way of communicating and recording which offers most of the necessary features. The work needs only knowledge of the medical job, pencil and paper. The basic assumption is that all buildings are used on the system:

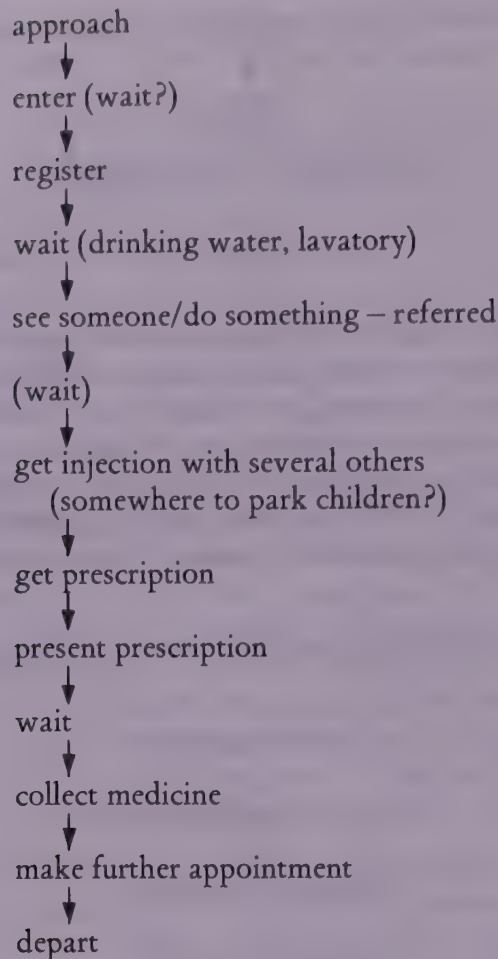


This is called an activity sequence. Activity sequences can be expanded or made more complicated to any useful level and can be used for either people, things, conditions (such as 'highly dangerous'), routines, etc. An expanded routine for visiting an Under Fives' Clinic is attached to these notes and illustrates the technique. Supported by information on waiting areas (to be found in Appendix 5 of the C.B.M.S. report) this activity sequence will act as a briefing medium and a plan testing medium for this clinic **IRRESPECTIVE OF BUILDING SIZE, NUMBER OF STAFF OR WORK LOAD**. In other words, once it's been done it is done. The sequence holds good for a one-room clinic or a Teaching Hospital.

Also attached is an Out-patient Department plan from the Nairobi Conference Report. If one takes a 'floor pattern' as:



one sees the purity of this design. There is no cross-circulation. But put actual people in and the whole thing collapses. Try running people through this plan in accordance with the following sequence and you will see, for instance, the corridor jammed with angry uncross-ventilated people carrying children and bags, being barged about and probably getting the wrong medicine.



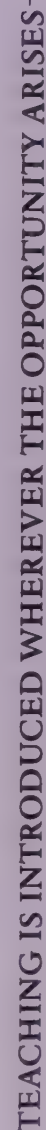
I am not saying that people should be made to wait – only that it is bound to happen, that there will be toing and froing, that medicines can't be dispensed in seconds, that injection rooms don't work in the same way as dressing stations, and what about septic dressings and who could 'instruct' anyone in that far too small waiting room full of chaotically lost people and would it be possible to design a unit so it had to employ more staff?

Doctors and nurses know what they are doing, but are too often conditioned by traditional solutions. If they could describe their actions without naming rooms then the architect could design to fulfil the routines. The doctors could then come back and the design could be tested by user and designer against the routines and the way people behave.

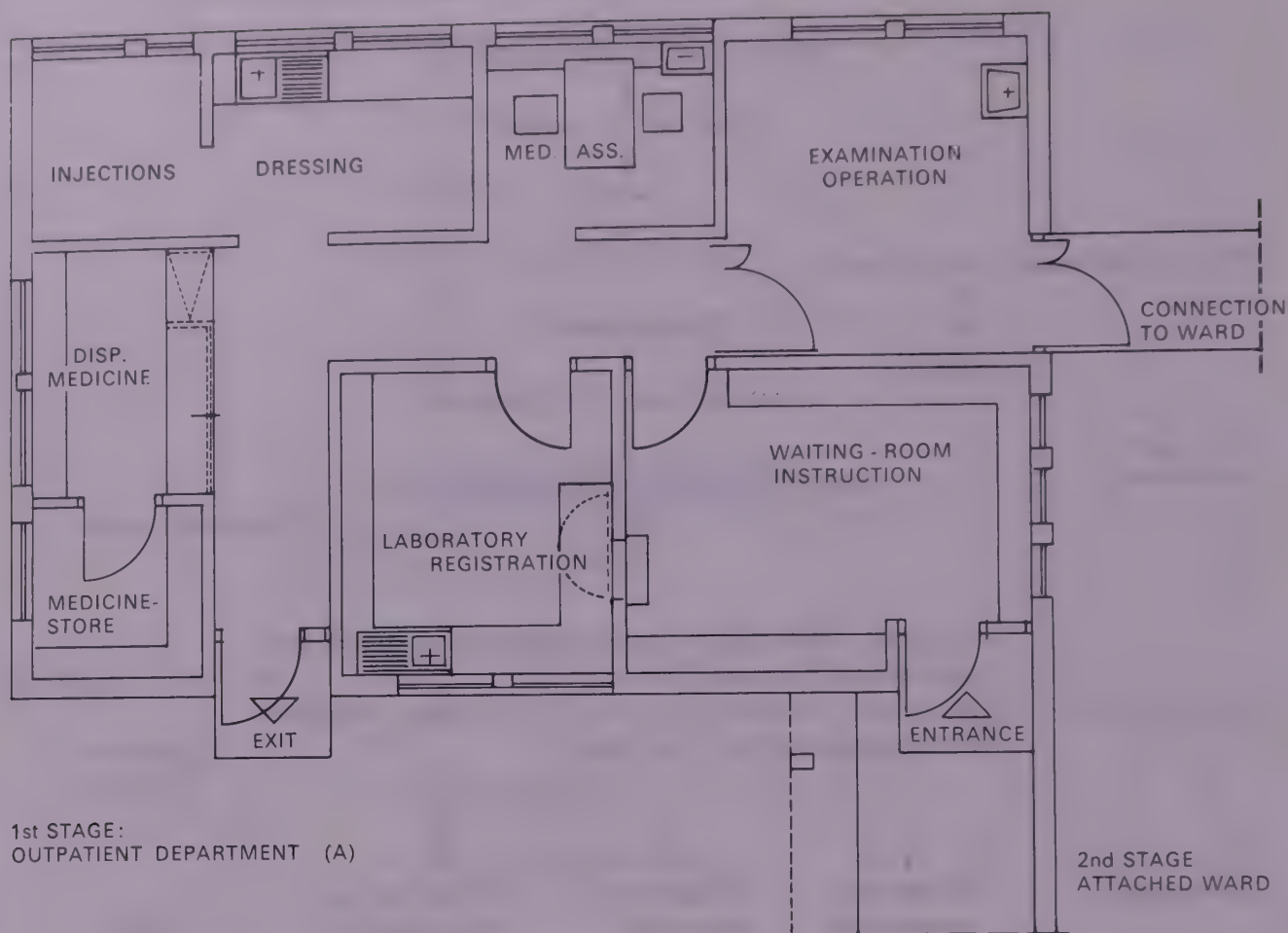
I hope this illustration will have served to make my point that new ways of communicating, recording and testing are needed. How these methods fit with treatment decisions is, I think, clear. As scale is not involved, the results can be given a very wide application. We should be able to make and test alternatives and see how they fit with other care routines elsewhere.

Of this much I am certain – there is no way of testing our ideas about health care which doesn't include predictions about the buildings we need, the jobs to be done in them, the staff that will be needed and how they are to be trained. I believe we have made only feeble and irrelevant gestures in the direction of hospitals, but don't quite yet see the need for absolute despair. There are ways out.

Appendix 2 (ctd)



*Attendant could be a school child. Arrival can be noted in 30 seconds. This system means queues can be avoided. Attendants should be trained to recognize children needing immediate attention, hence the introduction of (treatment) at this point.



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- ²C.B.M.S., Edinburgh House, 2 Eaton Gate, London SW1.
- ³*World Hospitals*, I.H.F., Volume XI, Edition Nos 2 and 3, 1975.
- ⁴Butterworth.

DISCUSSION

The main point that MR WELLS was at pains to drive home was that hospitals and medical services generally must be planned in the light of the needs they were to serve and the resources available. A large western-type 'disease palace' – preferably situated on the main road between the airport and the principal hotel – might meet the 'prestige' requirements of the politicians but was usually the

very last thing a developing country needed or ought to have. Such hospitals, costing far more to run than the country could afford, provided highly sophisticated treatment and appliances which were unsuited to the country's basic needs and, as medical training schools, produced doctors unwilling to work in the rural areas and who were, in any case, lost without the facilities to which they had become accustomed. A balance had to be struck between what was needed and what could, in fact, be provided in the immediate and in the more distant future.

So far as hospitals were concerned, in the context of the present symposium, the essentials included provision for some surgery and for the essential subsequent care, i.e., physiotherapy and rehabilitation. This involved some out-patient departments but the emphasis should be on in-patient care. A hospital should exist to care for those who could not be treated successfully elsewhere – at home, at health centres, or at village clinics.

On that basis, it should be possible to work out a universal model scheme for any country that would produce a properly balanced health system. The first thing would be to collect and classify the necessary information covering the physical planning (siting, roads, transport, etc.), the training needs (for doctors, auxiliaries, etc.), the programming of expenditure and the direction of technological research. Every effort should be made to avoid duplication at every level. A further aim should be to promote understanding inside the country, among politicians, church members and others and to combat the secretive and jealous professionalism sometimes met with in medical circles.

Granting, therefore, that some form of hospital was needed, of what type should it be? For the foreseeable future, there could be no question of teaching or specialist hospitals and it was probable that district general hospitals on the western model would also be too expensive and not altogether what was wanted. To MR WELLS's mind, the answer lay in rural health centres supplemented, possibly, by aid posts. Such health centres would be supported by rural hospitals, strategically sited to serve the appropriate areas and provide the advanced diagnoses and treatment not available in the centres themselves. The current tendency was to concentrate on urban health care to the near exclusion of the rural areas. Not enough consideration was being given to the need for quality and excellence in the care provided for the populations outside the towns.

MR WELLS then turned to the question of hospital design and, after expanding the views set out in his report, appealed for more co-operation between doctors (and other hospital staff) and architects. Improved communication between users and designers would result in informed decisions being taken as to optimum size and arrangement from the beginning, with a consequently beneficial effect on the planning and on the necessary investment.

DR GARST said those providing aid often demanded a showpiece for their money which meant that it was not always put to the most practical use. It was a mistake for financial aid to be accompanied by strings. On the other hand, while countries would accept good advice, they too often wanted a showpiece, with a view to obtaining as much money as possible when the real object they should aim at was to provide the maximum facilities at the minimum cost. MR BRAND condemned the common assumption that medical training could only be given in a central hospital and thought it should be given in the place where the job was to be done although there would also have to be a small unit for specialized medicine and training. Even if the training of doctors could not always be carried out 'on the spot', there could be no difficulty in the case of the training of paramedics.

MR DUNCAN GUTHRIE pointed out that those providing aid often lacked the necessary knowledge and appealed to those putting forward projects to provide the necessary information.

MR VIEL said appropriate training must be provided for the few but essential trained physiotherapists who would go out to teach the village workers. The curriculum must take account of the types of disease with which they would have to deal but must also include instruction on how to adapt to local conditions. To be useful they must be accepted by the people among whom they were to work and that meant themselves accepting those conditions. There must be no feeling of superiority or looking down on the local inhabitants 'because they are not like us'. Before going to work in a developing country, they should study local history and conditions and learn the appropriate behaviour and how to communicate. Villages had a very finely-tuned 'pecking order' and workers from outside must learn how to fit in. Even such things as physical attitudes and gestures were important as the same attitude or gesture could mean very different things in different areas. Local beliefs, such as the importance of the movement and appearance of the moon and stars in some countries, or the belief in Guatemala, for instance, that to take blood from a person was to draw off some of their strength, must be accepted and taken into consideration when giving treatment. Equipment such as shoes, calipers, etc., should be kept by the patient and, in that connection, the social significance of the wearing or otherwise of shoes must be borne in mind. Lastly, there was the question of identifying the disabled in a village. Apart from the obvious cases, one method was to ask whether there was any physical action that one inhabitant was unable to perform which caused no difficulty to the rest such, for example, as looking at objects above his eye-level. This kind of screening could be carried out by non-medical staff.

DR AROLE referred to the differences between communities, even inside the same country. Good medical care was available in India in the cities, but for various economic, geographical and cultural reasons, adequate care was not easily accessible in the country for the many millions who needed it. City-trained doctors were apt to ignore the cultural attitudes of rural communities and even health workers from such communities who trained in the cities were apt to return home with their attitudes quite changed.

The Maharashtra health project provided for mobile teams operating from local health centres and there was also a three-year programme for the control of tuberculosis, leprosy and blindness, as well as the provision of health care for pre-school children and their mothers. The local young farmers' club was usually involved in the programmes, partly by producing nutritional foodstuffs on hitherto uncultivated land, with the help sometimes of disabled labour. There was no rehabilitation programme for the disabled as such, but all the weaker sections of the community were helped at different levels to find jobs and the government planned to give land and build houses for them. The village health workers also helped by identifying conditions leading to disablement. With reference to 'on the spot' training, DR AROLE said he himself had had his first training from Mr Brand in village huts so that, when he subsequently went to a western university, he had some idea what to discard as unnecessary. To his mind, one of the most important things was to prevent delay in carrying out immunization programmes and he suggested that the young farmers could be of great use here.

Owing to the work done by the mobile health teams, only some 5 per cent of the problems encountered had to be referred to the centres, one of the main uses of which was to train village workers who attended them twice a week. Blood donors came from the young farmers' clubs. One question that arose was how much each centre should do and it had to be realized that it was by no

means necessary for everything to be done at the highest level. For highly specialized training and treatment a central hospital was, of course, necessary and cases that could not be adequately dealt with at the health centres were referred to Bombay.

DR AROLE concluded by saying that the concept of health care through local health centres was spreading but that the great obstacle remained the attitude of the professionals which he described as frigid and insensitive. He himself tried to by-pass that by appealing to the politicians. In the last resort, however, everything depended on the altruism of the professional doctors and other medical staff.

MISS WOODLAND said the Unit had a considerable amount of research material on the health care of disabled children and also provided teaching aids at a low price. Although also available elsewhere such aids were apt to be very expensive. The Unit also produced sets of slides, either inexpensively or free of charge. It would be glad to receive any relevant pictures or films to make into slides and was prepared to offer help over production and scripts. It also made available books which could not be obtained elsewhere and would be very pleased to send its annual list of books and slides to anyone who would write and ask for it.

DR WERNER then showed a second film with pictures of a new health centre built entirely with local labour, skill and materials at a total cost of \$400. There were also pictures of a health worker who had begun buying medicines and treating people for simple ailments after he himself had become disabled. Because of the great love and confidence he inspired in the villagers they had chosen him to be sent for training and he was now a regular and most successful health worker. Cases he was unable to deal with himself he sent to the main referral centre which was also run by the villagers. Other pictures showed teams of villagers carrying out various operations, including skin grafts and simple eye surgery, after having been given the necessary training and supervision over a period by a professional who continued to visit them whenever he could. This development had been more or less forced on them, owing to the low standard of the hospitals along the coast to which their own referral centres had been sending patients. It had proved remarkably successful. Patients were charged a fee which could be paid either in money or in hours of work, the one stipulation in the latter case being that the work had to be done, if not by the patient himself, which might not be possible, then by a member of his family. The referral centre had loaned a piece of land down by the river on which crops for the community were grown by labour given in this way. The film ended with a picture of an old village woman, who had died only recently, who had worked all her life as an untrained spiritual healer. DR WERNER said he and she had worked closely together and referred patients to each other as given cases seemed to require. He could not explain her undoubted gifts but he could bear testimony to her extremely successful work.

DELIVERY OF VOCATIONAL REHABILITATION SERVICES IN DEVELOPING COUNTRIES

N. E. COOPER

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It is impossible to lay down a 'blueprint' scheme for delivery of vocational rehabilitation which would be applicable to all developing countries. Significantly, I.L.O. Recommendation No. 99 on which I.L.O.'s basic policy in vocational rehabilitation is based, advocates that 'vocational

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rehabilitation services should be adapted to the particular needs and circumstances of each country and should be developed progressively in the light of these needs and circumstances . . .'. Much, of course, depends on the level of social and economic development reached by a particular country; the incidence of disability in general and specific disability groups; the state of local knowledge and awareness of needs and possibilities; the pattern of industrial and rural development; and last but not least the financial, administrative, technical and personnel resources available. These factors govern both the scope and objectives of vocational rehabilitation programmes and determine how they should be planned and delivered.

With these important considerations in mind, it is imperative at the earliest stage of planning a vocational rehabilitation programme to define not only the meaning of 'vocational rehabilitation' but also the term 'disabled person'. I.L.O. Recommendation No. 99 provides clear and concise definitions of both terms as follows:

Vocational rehabilitation means that part of the continuous and co-ordinated process of rehabilitation which involves the provision of those vocational services, e.g., vocational guidance, vocational training and selective placement designed to enable a disabled person to secure and retain suitable employment.

A disabled person is an individual whose prospects of securing and retaining suitable employment are substantially reduced as a result of physical or mental impairment.

But definitions in themselves are not sufficient. We need to know the size of the problem confronting us. Unfortunately, even in developed countries, there is a dearth of detailed statistical information on the extent and incidence of disability; but in a recent document¹ on the global disablement problem, the World Health Organization indicated that at least 10 per cent of any population group have a disability in a major daily activity and/or in mobility. This gives a world total of 400 million disabled people with one-third of them estimated to be dependent on daily help from others; moreover, at least two-thirds of the total (the majority of them living in developing countries) have no access to basic rehabilitation services. Obviously then, the problem is of such magnitude and sufficiently widespread as to justify urgent and immediate interventions in all countries.

Whilst every effort should be made to ensure that the vocational rehabilitation programme should be genuinely national in size, scope and character, it is important to plan within the limits of national resources. It seems appropriate, therefore, to think in terms of services that will cope eventually with the assumed number in working age groups becoming disabled annually.

The programme may be primarily sponsored by government in close co-operation with voluntary organizations (as in Nigeria, Kenya and Malaysia), a voluntary body (with active government support) may be given the task (as in Trinidad and the Dominican Republic), or the main efforts may be channelled through a national social security scheme (as in Colombia, Brazil and other Latin American countries). Whichever method is adopted, however, government involvement and financial support is imperative. Moreover, provision for vocational rehabilitation of the disabled should be included wherever possible as an essential component of general health, social welfare training and manpower schemes in all national development plans. In effect, the economic value to the country of employing rather than passively supporting vast numbers of disabled persons needs to be recognized.

¹Disability, Prevention and Rehabilitation. WHO.A29/INF.Doc/1 – April 28th, 1976.

When planning for the delivery of a national vocational rehabilitation programme, no one would question the wisdom of providing a firm legislative basis which would not only define the term 'disabled' or 'handicapped' person, but also provide support for long-term planning, organization and administration of essential services. It is suggested, however, that in the initial stages of the rehabilitation programme no attempt should be made to introduce detailed and complicated legislative measures, including compulsory 'quota' employment schemes for the disabled. Such schemes are expensive to operate and require highly trained administrative staff. It is far better to legislate for a national vocational rehabilitation scheme in general, broad terms with the proviso that the responsible ministry can introduce essential regulations, aimed at promoting employment opportunities for the disabled, at the appropriate stage of programme development.

The planning and delivery of a fully co-ordinated and comprehensive vocational rehabilitation programme requires the co-operation of the labour, health, education, social welfare and community development ministries, social security departments, voluntary organizations interested in the disabled, employers' and workers' organizations. In the initial stage of planning some governments have found it advisable to convene an inter-ministerial rehabilitation committee to develop a policy and co-ordinated delivery of services.

Community involvement in all stages of planning, organization and delivery of services is also essential and this can be realized through the formation of a national rehabilitation board or council on which all rehabilitation interests (governmental, non-governmental, employers' and workers' organizations) are represented. Such a national body, served by provincial and district sub-committees as appropriate, can play a leading role not only in identifying the size of the disablement problem but also the need for and type of services required. In addition, it can help educate the public, modify its attitudes and prejudices and explain policy in vocational training, employment and resettlement of the disabled. Through the national council, good public relations can be fostered, encouraging fund raising in support of projects for which government funds are not readily available.

The ministry or organization responsible for planning the programme (through a specially created department or division of vocational rehabilitation) must take into account the need to create work opportunities for the disabled in both rural and urban areas, particularly when a high rate of unemployment exists in the country. This can be achieved by sponsoring sheltered production workshops, cottage industries (utilizing local materials), rural co-operatives, creating market outlets and selecting vocational training courses according to local demand.

A careful survey of services already available (particularly those developed by voluntary agencies) and including existing placement and vocational training facilities for the general population, should be carried out at the earliest possible stage of planning, not only to avoid duplication of effort, but also to ensure their co-ordination with the national proposals.

The programme to be delivered should, of course, be related to budgetary resources, available staff and buildings. In the first three years of operation of the programme, it is suggested that the minimum aim should be to plan for the establishing and delivery of some or all of the following

services and pilot projects (with the final two years of a five-year plan being devoted to consolidation, extension and duplication of existing services):

- (i) Identification and registration of the disabled on a continuing basis.
- (ii) A ministerial department of vocational rehabilitation (headed by a director of rehabilitation or principal rehabilitation officer).
- (iii) A national rehabilitation board or council.
- (iv) An urban vocational assessment and work preparation centre for 100 disabled persons designed to offer short courses of physical reconditioning and preparation for wage-earning employment. Associated vocational training courses could be considered both in the centre and in classes established elsewhere.
- (v) An urban sheltered production workshop (for 100 people and located in the vicinity of the assessment centre) providing employment for those who are too severely disabled to work in 'open' industry.
- (vi) A rural vocational rehabilitation centre (with associated sheltered workshop) for 100 disabled persons who, following a physical reconditioning and assessment course, could be trained in several aspects of rural activities, i.e. work methods in agriculture, small animal farming, home tailoring, shoe and leather work, rural crafts, literacy, hygiene and citizenship, etc., with the whole course averaging nine to twelve months.
- (vii) A rural co-operative designed to offer a livelihood to groups of workers (after training) in trades such as vegetable tanning, carpentry, bamboo work, market gardening, pig, poultry and rabbit keeping, etc.
- (viii) A selective placement service for the disabled.
- (ix) A mobile rehabilitation service for disabled women at rural level. (The mobile unit would concentrate on those women unable to leave their homes for courses in established centres, and teach methods of overcoming disablement in the home, including home management, child care, sewing, nutrition, hygiene, etc.)
- (x) The provision of a 'mobile' delivery and collection scheme, possibly as a co-operative, to organize the distribution of raw materials and the marketing of finished products.

Provision should also be made during the plan period for active support to be given to existing vocational rehabilitation services and for systematic training (through specialized courses and in-service methods) of the required staff.

Before deciding on the introduction of specific training trades or production work for rehabilitation centres and sheltered workshops, a vigorous employment market investigation and feasibility study must be undertaken. This will ensure that rehabilitation and vocational training are organized and developed in relation to existing or anticipated job opportunities and that there is an assured market for goods produced in sheltered workshops. If possible, the costly 'institutional' type of centre should be avoided and the aim should be for a relatively quick 'through-put' of rehabilitees and trainees (i.e. short preparation and assessment courses and accelerated training). Publicity for the vocational rehabilitation programme in the planning stage should be strictly controlled. To raise the hopes of thousands of disabled persons while facilities exist for only a few attracts criticism and creates despondency.

It is suggested that in organizing and delivering services for the disabled in the national programme, priority should be given in the first instance to establishing vocational assessment and work preparation centres for the disabled (as indicated in (iv) and (vi) above). Such centres help to

speed up the resettlement process – their short courses providing an opportunity to distinguish between the potentially skilled, semi-skilled and unskilled disabled for both 'open' and sheltered employment. The centres should be the focal point of the whole vocational rehabilitation programme, supplying suitably prepared and assessed disabled workers to industry, commerce and agriculture, to vocational training centres, sheltered workshops, co-operatives and home employment schemes. Equally important is the opportunity they present for training vocational rehabilitation staff on a team-work basis. Detailed guidance on the planning, organization and administration of these centres is provided in the I.L.O. publication *Vocational Assessment and Work Preparation Centres for the Disabled*, reference D 15/1970. This handbook also indicates how vocational training courses can be organized for the disabled in association with assessment and work preparation courses.

In so far as a selective placement service for the disabled is concerned, this may be organized as part of an established government employment service or run in connection with a vocational rehabilitation centre or voluntary organization. Comprehensive guidelines for the organization of a selective placement service are to be found in the I.L.O. document *Manual on Selective Placement of the Disabled* – D 34/1965.

I have already referred briefly to the need for training of staff to service the delivery of rehabilitation services. Despite the efforts being made by the United Nations and specialized agencies, other international organizations and through bilateral arrangements, to provide fellowships for short- and long-term training of rehabilitation personnel from developing countries, the serious staff shortages which seriously impede the full development of national rehabilitation programmes are likely to persist for many years, unless some other ways and means are devised to overcome this acute problem. In other words, to quote from the report of the expert meeting on the Development of Rehabilitation Services in Relation to Available Resources (Killarney, Ireland, 1969) 'it is obvious that the pace at which personnel are being trained and other necessities for rehabilitation services are being developed, are not adequate to meet the current problem and certainly incapable of coping with the predictable growth in the numbers requiring professional help'. With this in view, and in an attempt to reduce the global disability problem and provide greater population coverage than hitherto achieved, we in the United Nations family together with international non-governmental organizations are trying to persuade governments to think in terms of a simpler delivery of rehabilitation services based at the Community level; this is in direct contrast to the sophisticated, institutional-type of facilities which are usually urban based, are so costly to operate and require such a high ratio of highly specialized staff in relation to the number of patients served. Undoubtedly, there is a most urgent need in developing countries to develop a system for delivery of services which will reach out into the rural areas where most of the disabled are to be found. Such a system should draw heavily on community support, utilizing multi-purpose aides and auxiliaries who would work within the framework of the national rehabilitation programme or in the primary health care and community development sectors.

For its part the I.L.O. accords high priority to the delivery of vocational rehabilitation services in rural areas of the Third World where work on the land is a way of life, not just an occupation. Our delivery of services in these areas concentrates on training the disabled person in activities of daily living rather than for a specific trade. In this way, many disabled are being integrated into active rural life and are making a useful contribution to the work of the family or community group.

In some instances, this simply means that the rehabilitation service has enabled them to perform some light household tasks, thus releasing a more active member of the family to work in the fields.

Finally with the principles and guidelines of I.L.O. Recommendation No. 99 very much in mind, I felt it would be helpful to participants of this Symposium if I were to summarize the I.L.O.'s basic policy in relation to the delivery of vocational rehabilitation services for disabled:

- each country should decide for itself what its most pressing needs are and what form its initial vocational rehabilitation programme should take, i.e., whether to have a national or regional programme for all disabled or to concentrate on one or two major disability groups; whether vocational guidance, vocational training, special placement services, sheltered employment or a rehabilitation centre are first needed;
- each country's decision in this respect should be based on a study of the available statistics of disability and the number, type and characteristics of available services;
- that even if the initial programme is restricted to certain disabled persons only, it be aimed at ultimately providing services for all disabled persons whatever the origin and nature of their disability, and whatever their age, provided they can be prepared for, and have reasonable prospects of securing and retaining suitable employment;
- the main objectives of any vocational rehabilitation should be: to demonstrate and improve the working qualities of the disabled; to emphasize their abilities and working capacities, not their disabilities; to promote working opportunities for them; to overcome employment discrimination against them – all these factors to be taken into account at the beginning of any programme;
- no matter what the scope of the programme, the greater attention and emphasis must always be placed on the final need for satisfactory placement in employment, i.e., resettlement;
- for each individual disabled person benefiting from it, vocational rehabilitation should be considered as one comprehensive and continuous process from the moment of identification as disabled to the time of satisfactory resettlement in employment;
- that any programme of vocational rehabilitation should provide services of vocational assessment and guidance, vocational training and selective placement in open or sheltered employment; and
- that as far as practicable, these special services for the disabled be provided within the framework, and form an integral part of, existing vocational guidance, vocational training and placement services and other human resources development activities.

DISCUSSION

MR COOPER said that, since its creation after the First World War, the I.L.O. had worked for social justice and the improvement of working conditions, the latter including, though only to a limited extent, a certain amount of rehabilitation. The organization had three regional advisers whose services were available, free of charge, at short notice. Its object was to establish guidelines and standards and it had been responsible for a number of international conventions and recommen-

dations. Recommendation 99, on which its vocational rehabilitation policy was based, spelt out the need to adapt the services provided to the particular needs and circumstances of each country, this being absolutely vital. Rehabilitation experts had to be trained to accept that western ideas were not easily translated in every case into the idiom of other countries. In the context of the present discussion, the disabled might be taken to cover all categories including disadvantaged groups, drug addicts, etc.

Vocational rehabilitation services could not be developed in isolation but called for co-operation between such bodies as Dr Slater's Research Group, governments, voluntary organizations, including the non-governmental organizations to whose work he would like to pay a special tribute, etc. An inter-agency rehabilitation meeting was held annually and three or four consultative meetings also took place each year. There must be community involvement in any programme and the trade unions were often of great help, especially in connection with the provision of jobs in sheltered workshops.

A point to be borne in mind was that the initial enthusiasm engendered always waned in time and for that reason I.L.O. usually asked governments to agree to a five-year programme with the government making itself responsible for the recurring costs such as salaries, the provision of raw materials, etc. The first three years of the programme would in most cases be enough to establish some or all of the basic services and pilot schemes required, leaving two years for consolidation, expansion and stocktaking. Commenting on the list of such services and projects given on page 119, MR COOPER said the national rehabilitation board or council should include, *inter alios*, representatives of non-governmental organizations, employers' syndicates, trade unions, and appropriate voluntary bodies. He also preferred the term 'sheltered production workshop' to the more usual 'sheltered workshop', on the grounds that the latter connoted very serious disability and heavy subsidies which need not by any means always be the case. Another important part of the programme was a well organized placement service, both for the disabled in general and sometimes also for special groups. Further details would be found in his paper. The I.L.O. also offered advice to governments on legislation establishing quota schemes for the employment of the disabled but it always tried to delay the introduction of such measures which were very costly in terms of staff and administration generally. Moreover, they gave the impression that the disabled were being employed on sufferance only and not on grounds of merit or capability. The goal should always be their employment in ordinary jobs but, in a country with a high level of unemployment, this could be unrealistic. The answer might be the promotion of co-operatives to create employment and he instanced the workshop for the manufacture of umbrellas which had been opened in Ethiopia with an initial capital of \$5,000 and was now making an annual profit of \$2,000. Mr Eaves had also described a similar project for making saleable goods in Nigeria.

Seventy-five per cent of the world's disabled lived in rural areas to which I.L.O. was consequently giving a high priority, but it must be realized that a different approach was needed from that found satisfactory in the towns. In the developing countries, farming was more than an occupation; it was a way of life. If a disabled person could be trained in the activities of daily living he could then release another member of the family to work in the fields. I.L.O. was organizing all-round nine-months' courses to ensure the successful reintegration of a disabled person in the community following his treatment. The staff for such courses were mainly locally-trained people but with one or two resident experts. Help was also given by local organizations.

Rehabilitation of the disabled in vocational terms presented various cultural problems, one of which was the difficulty of any form of psychological assessment as no such thing as a 'culture-free' test could be devised.

It was not always easy to induce governments to give the necessary high priority to vocational rehabilitation programmes, economists preferring projects concerned with material resources to those concerned with human ones. It was essential to inculcate the idea that vocational rehabilitation of the disabled was based on perfectly good economic reasons, not merely on social considerations.

MR COOPER ended by showing a film made in Colombia, entitled 'Back to Life', illustrating the vocational training provided for the disabled in Bogotá and their subsequent placement in industry, under a programme pioneered by Miss Hilary Schlesinger, a United Kingdom citizen, under the auspices of the I.L.O.

In answer to various questions, MR COOPER said several co-operatives for the blind had been set up in Africa and elsewhere and the idea was gradually catching on. The national organization in Colombia was S.E.N.A. and a number of people were passed on from it to ordinary classes. Asked whether any attempts were being made to organize local farmers to participate in vocational rehabilitation schemes, MR COOPER said it was necessary to begin in the towns where placement was easier. The country districts had been neglected but they were trying to extend services from pilot centres. The Bogotá centre, for example, was being used as a regional facility for other countries as well. He agreed, however, that greater efforts were needed to provide rural services, adding that they had met with greater success in Africa, instancing Tanzania and Ethiopia. Similar efforts were being made in Thailand and elsewhere in south-east Asia. I.L.O. was endeavouring to include a vocational rehabilitation programme as a part of development projects in rural areas but finding it difficult as no government had been willing so far to provide money for an inter-Ministry programme. MR WELLS suggested that government resistance could be by-passed by establishing community-based projects that would cost nothing but MR COOPER objected that, however simple, they were bound to need some capital. A better plan would probably be to create the type of national council suggested in the report. I.L.O. would certainly be willing to support the type of simple project proposed by Mr Wells but it could take no action except at the request of the government concerned. In reply to a question by the Chairman regarding the financial aspect of rehabilitating the disabled to work on farms when most, if not all the labour was supplied by the families owning them, MR COOPER said the object here was re-integration, not placement.

DR VARMA asked whether I.L.O. had any experience of developing trades which could be followed in the country. MR COOPER replied that the fact of placement being more usual in towns represented a weak spot in vocational rehabilitation everywhere, including western Europe and the United States; it was not confined to the developing countries, though he agreed that it constituted a particularly serious problem in India and other similar countries. MR WELLS suggested that it was useless to work out suitable courses in the west; suitable courses should be planned in the countries concerned for the disabled from rural areas.

A PRELIMINARY REPORT ON A SURVEY CONCERNING THE POSSIBILITY OF PROVIDING SIMPLIFIED REHABILITATION SERVICES AT THE PRIMARY HEALTH CARE LEVEL IN LATIN AMERICA

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Introduction

For some years health authorities in general and the World Health Organization in particular have been disturbed by the fact that whereas in the past thirty years much investigation has been done in the provision of sophisticated services to the physically disabled, not very much is known about the possibility of providing simple, but efficient and opportune, services to patients in their own homes or at the primary health care level.

The consequence of this trend has been that in both developed and developing countries, whereas the techniques for improving the self-sufficiency of the disabled have been improved; they have become more difficult and costly and are therefore only accessible to a very small part of the population requiring them.

Since it is obviously economically and geographically impossible to provide first-class rehabilitation services to 100 per cent of the world's disabled population, it has become recognized that although there will be some people in most countries who will be able to take advantage of advanced techniques (and others who cannot survive without them), investment should also be made in providing 'appropriate' services in or close to the patients' homes.

Among many workers in this field there is a 'feeling' that this could be done, but this is partly an emotional desire that it should be done and no dogmatic answers can be given until many more hard facts are known about the situation. We need to know first of all what are the real problems which prevent the physically disabled person from living the life of his peers and, secondly, which rehabilitation tasks are simple enough and safe to be performed by personnel with limited or un-specialized training.

The 'real' problems of any given disabled person will, of course, vary very much with his personality, his economic status, and where he lives; but in many of the smaller towns and villages of the developing world, the way of life tends to be relatively unsophisticated. Although there will be many differences in detail it may well be found that a number of the problems encountered can be, if not solved, at least 'alleviated' by similar simple activities. It should be noted that by 'activities' is included anything which may be of help, from simple exercises or 'activities of daily living', to contact with a person with the responsibilities of a social worker.

With this in mind, it has been proposed to carry out a survey in Latin America which will try to produce more definite data on these questions.

The Survey in Latin America

No examples exist upon which this survey could be based and it had to be started in a totally *ad hoc* manner. It is proposed in due course to use the early data to reorganize and redefine the methods used and finally to come up with a 'methodology'.

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Three countries agreed initially to participate (Mexico, Uruguay and Venezuela) and a fourth (Brazil) showed interest. Venezuela was selected as the host for the pilot survey, mainly because of the existing infrastructure at the community level.

Preliminary discussions were held in September 1975 between the Venezuelan Director of Rehabilitation Services and the Regional Rehabilitation Adviser of P.A.H.O. It was eventually agreed that, as this was to be the first part of the survey, more information would be obtained if a community were chosen which was neither too small nor too remote from existing facilities. The principal aim of this part of the investigation was to find out by experience how such a survey should best be made and it was felt that to try and start in a remote rural area would probably be so difficult and frustrating as to be of limited value at this stage. Consequently, the small town of Cagua in the State of Aragua was chosen and the date of the analysis of the disabled found there was set for the second half of April 1976.

Cagua

Cagua is a town of 35,000 inhabitants. It owes its existence to being set in the area where the main east-west and north-south highways cross each other and have done so since colonial times. It is predominantly agricultural (sugar and fruit). Cagua is about twenty-five kilometers from Maracay, the state capital; in the past, this was sufficient to keep it isolated but the construction of the fast highway between Caracas and Maracay made Cagua much more accessible to the facilities and influence of Maracay.

Only about half the population is stable. The rest are migratory because of the entry and exit of seasonal agricultural workers and because of the loss of population to Maracay.

The medical facilities of the city consist of one 'Centro de Salud', depending on the Ministry of Health, and three private clinics (details of these facilities are given in Appendix I).

Methods Used in the Survey

Contact was made in September 1975, with the head of the service of rehabilitation at the Maracay General Hospital. He in turn made contact with the Comisionado of the State of Anagua (the senior local health authority) and with the Director of the Cagua Health Centre.

It was suggested by the Director of the Health Centre that initial contact with the community could first be made by representatives of a local young people's club, the 'Grupo Juvenil'. Permission for this was obtained from the 'Padre' who organized the club. They investigated several streets on a 'house to house' basis and identified thirty-six patients with problems stemming from physical or mental disability. They asked some simple questions in connection with the type of disability and made an appointment for the patient to go to the Health Centre at the time when the Venezuelan Director of Rehabilitation and the P.A.H.O. Rehabilitation Adviser would be there (about ten days after the preliminary interview).

At the same time, the Sanitary Inspector made a similar survey of several streets. He also knew the population from preliminary contacts, but visited houses which were identified to him by other disabled people or their families; the theory being that one disabled person would usually know where others in the locality lived. He identified twenty-seven disabled persons and also made appointments for them to visit the Health Centre.

Comments on the above Methods

It is estimated that about one-fifth of the population was covered; i.e., about 6,000 people, but since this is not accurately known, no value can be attached to this figure. (The sixty-three patients identified would then represent about 1 per cent of the population visited.)

For the purpose of this part of the survey (to establish a methodology) the absence of the exact figure of the population visited does not matter, but in future surveys, it would be relatively easy to include it and it is proposed that this will be done.

If the sole purpose of the preliminary visit is 'identification' then it does not seem to matter whether this is done by volunteers or health professionals, so long as the volunteers are briefed as to exactly what they have to do. It is, in fact, proposed to concentrate on the use of volunteers at this stage of the survey as the few health professionals available have to make great sacrifices to find the time.

As will be seen later, it is very important that the individual who did the investigation should be available at a later stage as a guide to the patient's house, otherwise much time may be lost by strangers in places where identification by the 'address' may be most difficult.

Interviews with the Patients by the Visiting Staff

It had been arranged for about six or eight of the patients identified to be seen each day at the Health Centre by the Venezuelan Director of Rehabilitation and the P.A.H.O. Rehabilitation Adviser; the organization of these visits being in the hands of one of the young volunteers. In practice it was found that only about half of them actually arrived so from the first day the visiting staff arranged to see those patients who had not attended in their own homes.

During most of the time the volunteer was able to identify where the patients lived with the exception of those originally discovered by the sanitary engineer for which he acted as guide.

This system of visiting patients in their own homes, although more time consuming, was found to be much more revealing. Presumably because of the original interviews the visitors were easily accepted and the patients appeared perfectly content to have the opportunity to discuss their problems. In all cases it was carefully explained to them that the purpose of this investigation was to hear their problems and not to provide solutions at this time. This was done to prevent the building up of false hopes; although, in fact, a number of problems were to be solved with the use of existing facilities.

CONCLUSIONS

At this stage of the project it is, of course, impossible to draw definitive conclusions. However, one or two points appear to be emerging:

1. Identification of disabled persons can be done by *volunteers*.
2. A large proportion of disabled persons could have their way of life improved if it were possible for them to have contact with someone of the type of a *social worker*. This contact would frequently have to be made in the patient's home and would be of assistance in various ways:
 - (a) To inform patients as to any facilities which might be accessible and useful to them.

- (b) To inform health authorities when the patient needs facilities which are not readily available.
- (c) To inform health authorities when the patient needs facilities which are not readily available.
- (d) To enlist the help of friends and neighbours both in 'activities of daily living' and at times in assisting training or providing employment.

(In the Cagua situation one additional auxiliary social worker, attached to the Health Centre but free to make home visits, could be of great value to the community.)

3. The complete solution to many patients' problems appears to require the assistance of specialized services. Partial solutions may be achieved locally. In the Cagua situation, it is comparatively easy to provide specialized services because it is reasonably close to the rehabilitation service of the General Hospital in Maracay. It remains to be seen what occurs in more remote areas.
4. The next step would seem to be the organization of a similar investigation in a community much further away from specialized services. It is proposed that this should be done in October/November 1976.

APPENDIX

Medical Facilities at Cagua (Pop. 35,000)

(a) Health Centre ('Centro de Salud')

Owned and financed by: Ministry of Health

30 Beds: 4 Emergency Beds

1 Medical Director

1 Assistant Medical Director

6 Medical Residents ('Registrars') (5 general and 1 paediatric)

2 Lab. technicians

1 X-ray technician

3 Nurses ('R.N.s')

25 Auxiliary nurses (4 visiting or 'district' nurses)

1 Auxiliary social worker

(b) Three Private Clinics

Marley, with 12 beds

Sta Lucia, with 5 beds

Central, with 12 beds

20 doctors work in the above clinics, mostly part-time.

DISCUSSION

DR HINDLEY-SMITH began by endorsing the criticisms of 'disease palaces' and the 'penthouse' mentality voiced by previous speakers, as well as their comments on the need for more health work in the country areas. To his mind, 'appropriate' technology meant any technology that was practicable and useful in given circumstances. The fact that it had sometimes to be simple did not prevent the use of more complicated techniques where possible and necessary. The two were not mutually exclusive. He thought it a mistake to talk of 'developing countries' and preferred 'communities at different stages of development'.

There had been an uneasy feeling for some time in his organization that rehabilitation services were reaching far too few people; that they were operating to some extent in or from an ivory tower. As a result, some of its members had been sent to talk to people directly about their needs. Their first experiment in this direction was described in his report which explained the method followed and the information acquired. The investigation had dealt, not with inhabitants of the rural areas, but with those of small towns, or small districts of larger towns. His organization now had a mandate to carry out similar inquiries in other areas. In answer to a question, he said it would certainly make information available on the techniques it used to identify disabled persons. Some was available already but it depended on how disability was defined, the circumstances, etc.

There was a certain amount of criticism of the percentages shown in the report, based on the comparatively small number of cases or individuals examined. The report figure of about 1 per cent of the population visited identified as requiring services was very low as compared with the generally accepted figure of about 10 per cent although DR HINDLEY-SMITH pointed out that the figure of 1 per cent did not include such disabled persons as were already receiving treatment. MR WELLS commented that computerized statistics were expensive to produce and, to his mind, of little value. The only figures he regarded as of practical value were simple ones showing actual needs that had been identified. The figure of 10 per cent was for 'persons needing some kind of special service' which represented an extremely wide category.

A discussion then developed between the advocates of a system requiring preliminary investigation on the spot of the numbers requiring help, the various types of services called for, etc., to be followed at a later stage by the creation of such services; and those who maintained that this was apt to be a wasteful system and that the only practical method was to set up small, local services to deal with one or two obvious needs and allow them to expand naturally as more and more people came to hear of the existence of such centres and their further needs gradually became apparent. Those in favour of the former system pointed out that any large-scale organization of services had to have the backing (financial and otherwise) of the authorities which, in practice, meant the local politicians, and their first question always related to the number of persons involved. That meant being able to produce statistics: the number of disabled needing help, their exact problems, possible solutions, the amount of training those who would man the services would require, etc. Their opponents objected that the system had not always proved successful in the past and that it took a long time. There had been numerous surveys but the need for rehabilitation services was growing rather than diminishing. Surely it was better to begin actually dealing with cases, in however small or even primitive a way, and allow the services to develop from that. The crux was to discover the persons who needed rehabilitation that could be given by non-specialists, train such non-specialists and go on from there. In those circumstances, neither surveys nor

registration of the disabled were necessary; a village health worker would know every case in every house. 'Action research', as opposed to official surveys might be less tidy but was infinitely more useful. PROFESSOR GOLDING distinguished between surveys and registration; the latter prevented cases from being overlooked. DR WERNER uttered a warning: the only data that could really be relied on was that obtained from people – e.g., village workers – who knew and understood the people concerned. DR RAMA RAO said a questionnaire had been sent to general practitioners in the Bombay area which had revealed that even they could not define disability properly and their returns showed highly exaggerated figures. DR HINDLEY-SMITH, defending the P.A.H.O. experiment, said his organization was not so interested in figures as such; its concern was with people. Why were some people not living like their neighbours; how was it that some of the people they had identified in his organization's pilot scheme had been living close by existing services and yet had not made use of them, or perhaps even been aware of their existence? What he and his colleagues were aiming at was the promotion of services that would be, as Dr Werner had said, supportive and not oppressive.

INTERNATIONAL INSTITUTE FOR REHABILITATION IN DEVELOPING COUNTRIES, TEHERAN, IRAN

NORMAN ACTON

Secretary-General, Rehabilitation International

After a number of years of occupation with the special problems of advancing rehabilitation services in countries in the earlier stages of economic and social development, Rehabilitation International concluded that it would be advantageous to have a central point of concentration on these special aspects. Experience had established that so long as training, research and information activities were being carried out in the more advanced centres, it was impossible to avoid thinking in terms of the levels of service being provided there. Furthermore, it was thought that it would be advantageous if, by establishing an institution with some degree of international prestige, it would be possible to give greater acceptability to appropriate methods for use in countries in the earlier stages of development.

It was proposed that the functions of the Centre would be the following:

- (1) Training of types to be decided by experts in the field. It is probable that primary attention will be given to the training of individuals who can in developing areas train the actual field workers.
- (2) Demonstration projects in the host country of the Institute and elsewhere.
- (3) Advisory services provided by a panel of experts who would be identified by the Institute and work with it.
- (4) An information centre composed of a library, a documentation service, and audio-visual facilities – all devoted to the development of services in less developed areas.
- (5) Research and study in these fields.
- (6) A centre on technical aids which as a satellite of the International Centre on Technical Aids, Housing and Transportation (I.C.T.A.) in Stockholm would concentrate on technical aids of the simpler variety.

The decision was taken to place the Institute in Teheran, Iran, since strong local support was available there for it, and since Iran is a country that is relatively accessible to nationals of the various countries whose co-operation is anticipated.

It should be emphasized that the Institute itself will be a small co-ordinating organism without elaborate facilities. It will, as appropriate, make use of such facilities existing in Iran, as the Regional Training Centre for Technical Orthopaedics, a new rural training centre at Karadj, basic health service projects and others. It is hoped that similar facilities will also be available in other countries. The concentration of the Institute's programme will be on the problems of Asia, the Middle East, and Africa, with less emphasis on Latin America, where for reasons of language, culture and distance, it would be difficult to be effective.

The proposal was examined by a mission sent to Iran by the United Nations Development Programme, and it recommended that it was feasible. The government of Iran and other governments will be sponsoring the Institute, and the objective is an independent international institute, with management through a governing body and advisory bodies composed by participating international organizations, governments and experts.

The first Director of the Institute, Mr Robert Davis, has been recruited and will take up his duties in the near future. The Training Director is being recruited, and it is hoped that work will begin by January of 1977.

It is fully understood that it will be necessary to exercise great care that the work of the Institute does not slip into conventional channels, and it is sincerely hoped that all persons concerned with the innovative delivery of rehabilitation services in the areas of the world not yet being reached will co-operate in this undertaking.

CONCLUSION OF SYMPOSIUM

MR CARTER-JONES thought there had been general agreement on most of the ideas that had emerged from the Symposium. The object of rehabilitation, it was recognized, was to enable the disabled person to live an independent life, so far as possible, in his own environment and he had not been surprised to hear from Professor Breuer that the second was a condition of the first. In the United Kingdom there was a need for advanced technology and, in that connection, he mentioned the extraordinary achievement of the equipment known as POSSUM in enabling patients who had only minimum movement to learn such skills as, for example, typewriting. Such technology could not, however, be afforded by the developing countries and here it might be that the best was the enemy of the good by discouraging such countries from using the simpler methods or appliances that were available locally. The underlying idea in all the speeches and discussions of the past four days had been how to make the best use of the limited resources available to do the job that lay to hand. He hoped that a simple record of the experiences they had heard described and the evidence produced would be made available for use in the field. Mention had been made of the difficulties sometimes encountered in obtaining the essential materials and he intended to see whether, with Mr Acton, he could not succeed in getting some of the GATT import regulations withdrawn.

After referring to the ingenuity and skill shown in the manufacture of the various appliances they had heard described, and the fact that they had incidentally involved the discovery of a most effective method of re-cycling and disposing of motor-car tyres, MR CARTER-JONES congratulated Mr

Eaves on his film. What Sister Cecile had told them had underlined the need to understand the background of the communities among whom rehabilitation services were being developed. That was the case everywhere, not only in the Cameroon. There were fashions in medicine as in other things and he thought the politicians were not the only ones to blame for the erection of 'disease palaces'. Doctors and architects must bear their share of responsibility too. MR CARTER-JONES ended with a plea that technology should not be over-sophisticated. There were different methods of solving rehabilitation problems and the important thing was to share the information available and persuade others to give freely of their own experience.

MR DONALD V. WILSON said one point emphasized throughout the Symposium had been that health was a social subject and that health problems must be considered from the human angle. Rehabilitation was regarded as the third phase of medicine, following the preventive and curative phases; but, equally, medicine was a phase of rehabilitation. Vocational rehabilitation was of the greatest importance. Another point that had been made was that small was beautiful which, as an applied concept, meant moving rehabilitation services out of the large cities to small country centres, thus making them more accessible. Everyone had joined in condemning the 'penthouse' mentality and MR WILSON suggested reconsideration of past assumptions in the light of the possibility that they might have been wrong. One such assumption might be the one concerning the entire desirability of foreign aid. Lastly, rehabilitation services must be what MR WILSON called 'people-orientated'. In other words, they were not to be delivered *to* the people but for and with the people. The patient, as one speaker had said, must be the boss. In the same way, as much use as possible should be made of the community's own resources in terms of individuals, skills, raw materials and ways of life without relying more than could be avoided on outside help.

CONCLUSIONS AND RESOLUTIONS

At the conclusion of the symposium a number of suggestions were put forward. These are set out below with a brief summary of the comments to which they gave rise, followed by the specific resolutions adopted.

- I That information on fund-raising methods found successful in different areas be collected and disseminated.

Comments:

(1) Information on totally new methods could usefully also be sent to suitable publications, but all information would need to be analysed since every method would not necessarily be equally suitable in every locality. Rehabilitation International could do this. (MR NORMAN ACTON)

(2) In the light of such information aid groups might perhaps be told where their aid would be most useful. (MR DAVID WERNER)

Resolution:

That Rehabilitation International be asked to collect information on fund-raising methods and techniques, especially novel ones, which had proved successful in various localities, to analyse them and then to circulate details of those appearing capable of implementation elsewhere in the form of a small pamphlet.

- II That David Werner's book *Donde No Hay Doctor* be translated into English and made widely available.

Comments:

Mr Werner said a translation was being prepared and he was hoping to modify the book for use elsewhere than in Mexico. It was hoped that the first edition would be appearing shortly. Meanwhile he would be grateful for any ideas or suggestions as to how the book could be improved or expanded.

- III That those attending the Symposium should report back to the National Fund at the end of three years on the progress of their work during that period.

Comments:

Mr Guthrie said that the National Fund would certainly bear in mind the suggestion of another conference in three years' time and thought that the Commonwealth Foundation might also be interested in the suggestion.

- IV That a set of slides (with script) be made from Mr Eaves's film together, if possible, with an explanatory leaflet as these could be put to wider use than the actual film. This could be done by the Tropical Child Health Unit of the Institute of Child Health, University of London which made such sets available at a low price.
- V That governments be urged to promote poliomyelitis immunization to the greatest possible extent and that the fullest information be made available on the storage and transport of vaccines.

Comments:

The vital importance of immunization was recognized by all and MR SLATER said it was a priority item of WHO's programme. He also made the point, however, that it must be a *national* effort, the result of a *national* will on the part of both the donor and the receiving country. Another point made was that once an immunization programme had been begun it must be an on-going project; if dropped or allowed to lapse after a few years, as sometimes occurred for political as well as other reasons, it could end by doing more harm than good (DR CROSS). Transport and storage presented undoubted difficulties but these could be overcome and governments should be encouraged to look for every method of getting the vaccine to the people (MR WERNER). The object must be to spread education on the subject right through the community (MRS BLUME). DR SANKARAN reported that, as the amounts that could be imported were insufficient, the large-scale manufacture of vaccines were being developed in Poona.

Resolution:

That governments be invited to give higher priority to immunization programmes against poliomyelitis, to study every possible means of transporting and storing the vaccine, and to support the WHO programme.

- VI (1) That *simple* surgical methods and appliances be encouraged to enable children to walk upright. (2) That health workers be instructed in rehabilitation techniques. (3) That more health centres be opened in rural districts. (4) That films, leaflets, etc., explaining 'appropriate' rehabilitation techniques be widely distributed. (5) That governments be invited to permit duty-free imports of materials for the manufacture of prostheses and to facilitate import procedures for such materials.

Comments:

It was important for the disabled in a community to be identified by a trained worker. In some cases a specially trained worker would be needed to decide who would be dealt with by 'ordinary' rehabilitation methods and who would need specialized treatment. Members of the committees dealing with the work at administrative level should be brought together with the actual workers. Any health programme should include the use of experienced health workers (MRS BLUME). In connection with a suggestion that Rehabilitation International might take on the responsibility for recommending methods of organizing health services MR DAVID WERNER warned against standardization. It was useless to issue standard recommendations as to what given members of a health service could or could not do as this would result in what were intended to be flexible suggestions becoming rigid rules to be applied in every case. The truth of this was agreed. Referring to the dissemination of information PROFESSOR BREUER saw the danger that an organization might be broken down into smaller and smaller local units which would never see the situation as a whole and MR DUNCAN GUTHRIE wondered whether too many rural centres might not end by dissipating all available resources. MR DAVID WERNER put in a plea for regarding people – as opposed to money, appliances, etc. – as rehabilitation's basic resources. MR NORMAN ACTON mentioned the UNESCO recommendation, to which he had referred on the previous Monday, on the duty-free import of raw materials for prostheses and other

uses in connection with rehabilitation and said it was to be discussed fully at the organization's meeting in Nairobi the following month. A resolution from the present symposium would be welcomed at that meeting.

Resolution:

That governments be asked to permit the duty-free import of raw materials needed for the manufacture of prostheses and other equipment for disabled people and to facilitate import procedures in the case of such materials as well as of manufactured equipment designated for the disabled.

VII That international organizations be dissuaded from embarking on wasteful expenditure including in particular the duplication of effort and research.

VIII That a curriculum be drawn up for the training of 'omni-competent' auxiliaries and that a low-cost booklet be produced showing simple equipment produced locally in different countries.

Comments:

There was considerable support for the principle underlying this suggestion but doubts were expressed as to the possibility of acting on it in the near future. The suggested booklet on simple technical devices and practical methods would certainly be needed. DR SANKARAN mentioned the report published by the Pan-American Health Organization and said that he would be happy to provide diagrams, etc., showing techniques and appliances developed in his own country. MR NORMAN ACTON said that the provision of such information would be one of the functions of the new unit being set up by Rehabilitation International in Teheran. MISS LEVITT called for some kind of network to identify and collect what she called 'information on little things'. MR BRAND stressed the need for local screening to ensure local appropriateness. An enormous amount of information was already disseminated but such screening would be essential to the success of any general network of information. MR NORMAN COOPER said that no single resource centre could satisfy all needs; I.L.O. already provided information on rehabilitation generally as well as a certain amount of specialized data. Referring to the earlier discussion on

'disease palaces', MR BRAND said that as they existed they should be made use of but suggested that funding bodies might like to sponsor departments in the teaching hospitals to be responsible for arranging that their students did three to six months' work in rural areas as part of their training. This would be far the cheapest way of introducing them to new ideas and showing them the differences between working in a large hospital where every facility was available and working in the field. DR VARMA, while agreeing with the suggestion, added a warning about the need to select the right type of student for such training. MR OSHIN said students at his own hospital in Nigeria already spent three months of their training working at a rural centre.

IX That a suitably experienced investigator be appointed to spend, say, six months visiting different countries and regions to study and report on simple economic solutions that had been found both practicable and satisfactory in their results and analyse and disseminate the information thus obtained.

X MR DUNCAN GUTHRIE suggested that each of those attending the Symposium send an annual letter describing newly devised techniques or equipment which would be of general interest to a central point for dissemination to other members. He offered to reproduce and circulate such letters if sent to him and to be responsible for the management of the correspondence club.

Comment:

This suggestion was welcomed and agreed.

XI The following resolution was proposed by MR NORMAN COOPER and agreed:

That a general recommendation be addressed to all developing countries to give high priority to the rehabilitation of the disabled, stressing that even if the situation made it necessary for their initial programmes to be addressed to specific groups of disabled they should adopt as their eventual aim the extension of their rehabilitation programmes to the disabled of all types.

Mr Guthrie promised to do his best to draw the proceedings at the Symposium to the attention of all those concerned.

After detailing the arrangements for distribution of the report and other data, Mr Guthrie said that, as many of them knew, he was resigning the post of Director of the National Fund but only to take up other work in the same field. He trusted, therefore, not to lose touch with any of them but that they would continue to work together.

Mr Carter-Jones paid a high tribute to all Mr Guthrie's work which was warmly applauded. For his own part, he promised to continue to do his best to influence opinion in Parliament and public opinion generally in favour of action to help the disabled in every possible way.

FOUNDATION PUBLICATIONS

OCCASIONAL PAPERS

- *No. I 'Social Work Training Needs in East Africa.' Report on Regional Seminar in Uganda, December 1967.
- *No. II 'Medical Education in Papua/New Guinea (with special reference to the Teaching and Practice of Obstetrics).' Professor J. Lawson, F.R.C.O.G., November 1968.
- *No. III 'Professional Managers in Indian Industry.' G. J. West, F.C.C.S., F.R.S.A., General Secretary, British Institute of Works Managers, December 1968.
- *No. IV 'Mental Health Problems in the Developing World.' Report on Mental Health Workshops in Edinburgh (1968) and Kampala (1969).
- *No. V 'Quality in Education.' Report on a Conference of Inspectors of Schools from the Asia/Pacific area of the Commonwealth, Singapore, 1969.
- *No. VI 'Speech and Hearing Problems in South East Asia.' 1969.
- *No. VII 'East Coast Fever.' Final report of Edinburgh African Veterinary Expedition, 1969.
- No. VIII 'Conference of Librarians from Commonwealth Universities in Africa.' Report of Proceedings at Lusaka, August 1969. (Since reprinted.)
- *No. IX 'Work Study Practice.' Report on a Regional Commonwealth Works Study Seminar, Singapore, May 1970.
- No. X 'Orthopaedic Problems in the Developing World.' Report on a Commonwealth Lecture tour by Professor R. L. Huckstep. Makerere University Medical School, July–September 1970. (Since reprinted.)
- *No. XI 'Manpower Planning in the South Pacific.' Regional Seminar in Fiji, July 1970.
- *No. XII 'Communications and University Teaching with particular reference to the Caribbean.' A Report from the Inter-University Research Unit, Cambridge.
- *No. XIII 'The Role of the Professions in a Changing World.' Report on a Conference held at the Professional Centre of Singapore, October 1971.

- No. XIV 'Human Ecology in the Commonwealth.' Report of a Symposium held in London in November 1971 by the Commonwealth Human Ecology Council.
- No. XV 'Adult Education and National Development.' Report of a Commonwealth Planning Seminar held at the University of Manchester in October 1972. (Reprinted 1973.)
- *No. XVI 'The Commonwealth Foundation Race Relations Bursary Scheme.' Report on a Seminar, September 1972.
- No. XVII 'The Application of Architectural Research to Practice.' Report on a Commonwealth Seminar at Edinburgh, January 1973.
- No. XVIII 'The Organization of Science and Technology for Development.' Report on a 1973 Foundation Caribbean Lecture Tour by Dr K. F. Tupper, formerly Vice-President, Canadian National Research Council.
- No. XIX 'Commonwealth University Co-operation.' Report on a Foundation-sponsored Seminar at the I.D.S., Sussex, August–September 1973.
- No. XX Report on a Team Visit to Universities in Commonwealth West Africa from the Universities of the West Indies and of Guyana, 1973.
- No. XXI 'Social Significance in Science and Mathematics Teaching.' Report on a Commonwealth Conference held at the University of the West Indies, Jamaica, March 29th–April 2nd, 1973.
- No. XXII 'Quality Education for National Development – The Role of the Adviser.' Report of a Regional Symposium held in Fiji, August–September 1973.
- No. XXIII 'Orthopaedic Training in Developing Countries.' An International Symposium sponsored by the Commonwealth Foundation and the National Fund for Research into Crippling Diseases. Oriel College, Oxford, September 12th–15th, 1973.
- No. XXIV 'Rural-Urban Migration in Tropical Africa.' Report on a Commonwealth Foundation Lecture Tour by Guy Hunter, C.M.G.
- No. XXV 'Meeting the Health Needs of our Developing Countries – Past, Present and Future.' Report on a Commonwealth Foundation Lectureship in West Africa by Professor S. R. Dodu of the Ghana Medical School.
- No. XXVI 'Adult Education and National Development.' Report of a Regional Seminar held in New Delhi, March 1974.
- No. XXVII 'Surveying and Land Economy in the Commonwealth.' A description of these professions, their advancement in developing countries and the facilities required for education and training.

- No. XXVIII 'Commonwealth Co-operation. The role of the Commonwealth professional associations.' Report on a meeting held at Marlborough House, London, on October 15th, 1974.
- No. XXIX 'Rural-Urban Drift in Africa.' Report of a regional conference held in Nairobi in February 1974, by the Commonwealth Association of Planners.
- No. XXX 'Problems confronting the Industrial Scientist.' Report on a Commonwealth Foundation Lecture Tour of India and Sri Lanka in March 1974, by Dr R. N. Gonzalez, formerly Technical Director, Scientific Research Council, Jamaica.
- No. XXXI 'Human Ecology and Hong Kong.' Report on a conference held in Hong Kong in April 1972, by the Commonwealth Human Ecology Council.
- No. XXXII 'The Professions, Universities and the Civil Service – Mutual Interaction.' Report on a Seminar sponsored by the Commonwealth Foundation at the Professional Centre, Jamaica, January 1975.
- No. XXXIII 'The Importance and Relevance of Librarianship for Developing Countries.'
- No. XXXIV 'Problems of Deafness in the Newer World.' Proceedings of a Seminar convened by the Commonwealth Society for the Deaf at the University of Sussex, September 1974.
- No. XXXV 'Human Ecology.' A survey of courses offered at Institutions of Higher Education in the Commonwealth.
- No. XXXVI 'Legal Education and Public Law.' Report on a Commonwealth Foundation Caribbean Lecture Tour by Professor L. Neville Brown, formerly Dean, Faculty of Law, University of Birmingham, December 1975–January 1976.
- No. XXXVII 'The Development of Library Services in Papua New Guinea.' Report on a Consultancy Visit to Papua New Guinea in September 1975, by Mr. H. Holdsworth, Chief Librarian, University of the South Pacific, Suva.
- No. XXXVIII 'The Conservation of Historic Towns and Monuments.' Report on a Commonwealth Foundation Lectureship in Africa, February/March 1976, by Dr D. Linstrum, Radcliffe Lecturer in Conservation Studies, University of York, Britain.
- No. XXXIX 'Industrial Management Education in the Commonwealth.' A Report on Advisory Visits paid by Staff Members of the British Institution of Works Managers to Singapore, Malaysia, Malta, Jamaica, Trinidad and Tobago and Nigeria – 1972–1975.

No. XL 'Problems facing the Medical Laboratory Profession within the Commonwealth. Report on a Commonwealth Seminar convened in London in January 1976 by the British Institute of Medical Laboratory Sciences.

**Now out of print.*

